# Rolsen

## Plasma display television Service Manual

**Classis: MST9**

**Product Type: RP-32H10, RP-32H20**

**Ver 1.0**

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# Product Safety Servicing Guidelines

**CAUTION: BEFORE SERVICING THE CHASSIS, READ THE "SAFETY PRECAUTION" "PRODUCT SAFETY NOTICE"ON PAGE 3 OF THIS MANUAL.**

## 1. Safety precautions

**WARNING:**
Service should not be attempted by anyone unfamiliar with the necessary precaution on this receiver. The following are the necessary precautions to be observed before servicing this chassis.
1. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as: non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
2. When replacing parts or circuit boards, disconnect the power cord.
3. When replacing a high wattage resistor (oxide metal film resistor) on the circuit board, keep the resistor 10mm (1/2in) away from circuit board.
4. Connection wires must be kept away from components with high voltage or high temperature.
5. If any fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.

## 2.Product Safety notice

Many electrical and mechanical parts in the chassis have special safety-related characteristics.

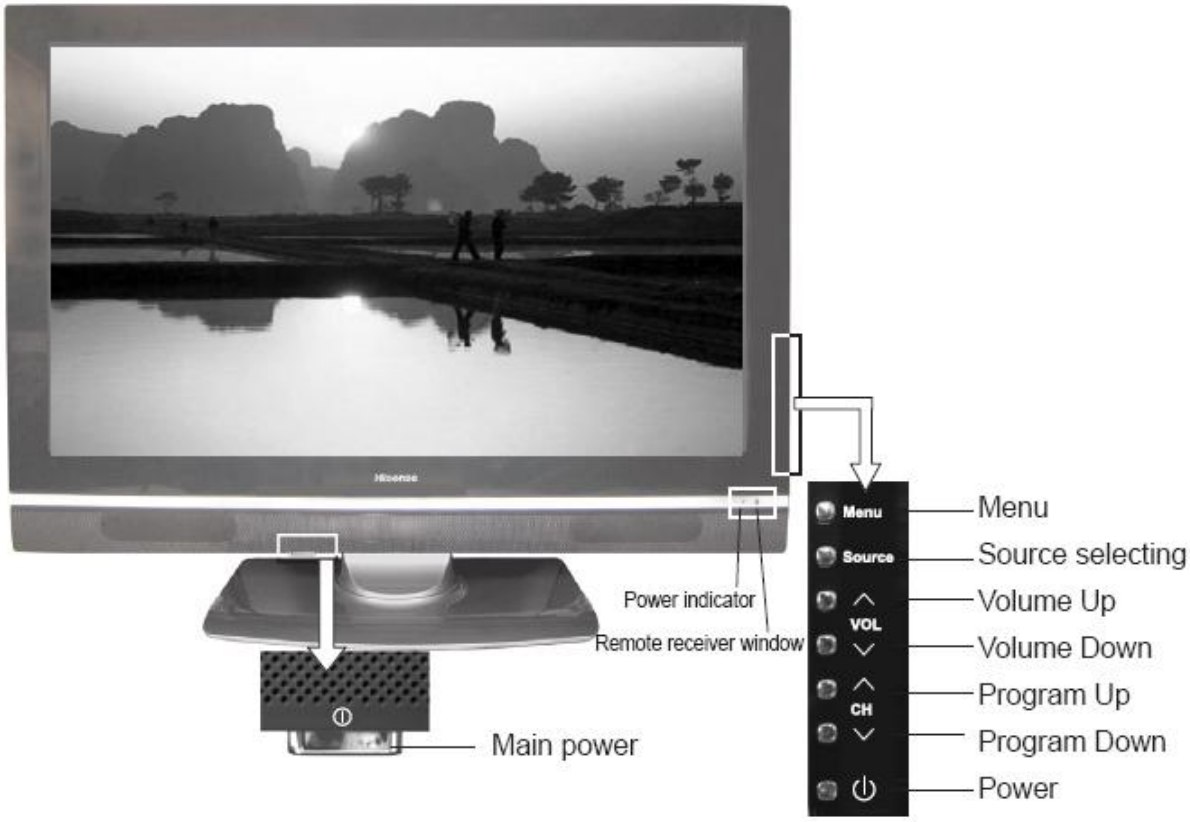
These characteristics are often passed unnoticed by a visual inspection.
Replacement parts, which have these special safety characteristic are identified in this manual and its supplement electrical components having such features are shaded on the schematic diagram and the parts list.

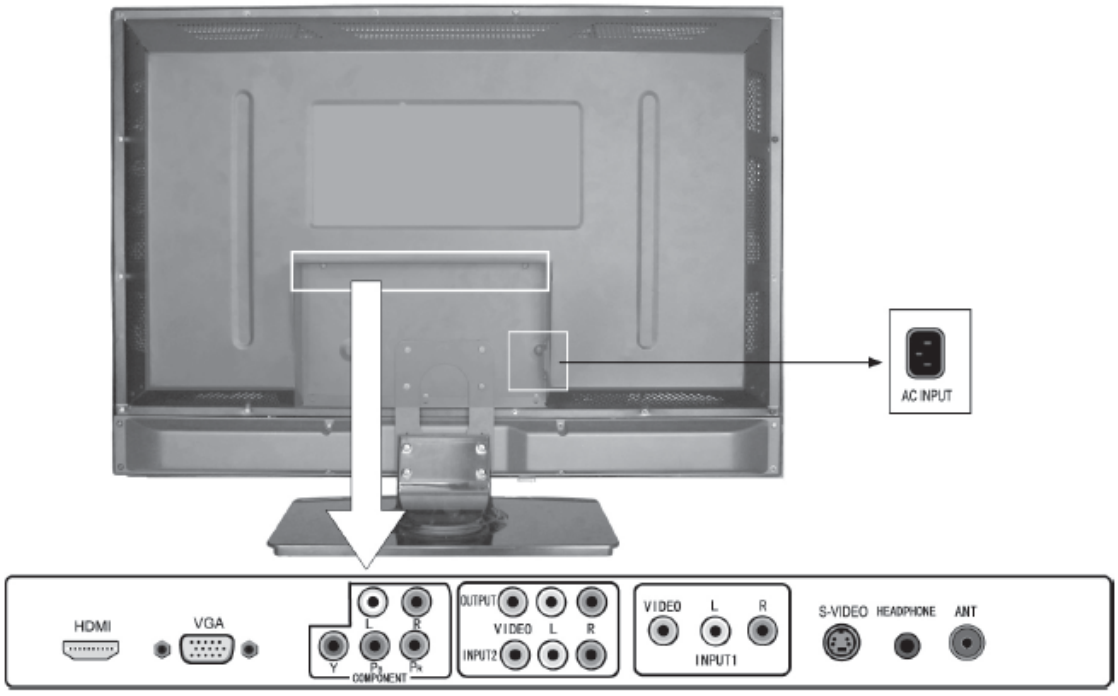
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts, which do not have the same characteristic as specified in the parts list may create shock, fire or other hazards.

**NOTES:**
***Screen Image retention*** Do not display a still image (such as on a video game or when hooking up a PC to this PDP) on plasma monitor panel for a long time as it can cause screen image retention. This image retention is also known as "screen burn". To avoid such image retention, reduce the degree of brightness and contrast of the screen when displaying a still image.
***A still image displayed too long may cause permanent damage to the PDP Panel*** Watching the PDP TV in 4:3 format or other non full screen formats for a long period of time may leave traces of borders displayed on the left, right and centre of the screen caused by the difference of light emission on the screen. Playing a DVD or a game console may cause similar effect to the screen. Damages caused by the above effect are not covered by the Warranty.
***Afterimage on the Screen*** Displaying still images from Video games and PC for longer than a certain period of time may produce partial afterimages. To prevent this effect, reduce the brightness and contrast when displaying still images for a long time.
***Height*** The PDP can normally operate only under 2000m in height. It might abnormally function at a place over 2000m in height and do not install and operate there.
***Avoid operating the TV at temperatures below 5℃(41°F)***
***Warranty*** Warranty does not cover any damage caused by image retention; Burn-in is not covered by the warranty.

# Product Fuction Specifications

## 1.PDP3208 product function



- High end flat display
- HDMI input
- High definition compatible
- Wide Screen display optimized for cinema viewing
- Multimedia display :TV/PC
- High clear picture
- Audio equalizer
- Color enhancer ,contrast enhancer

## 2. PDP3208 specifications

| | PDP3208 | |
|---|---|---|
| PDP panel | Plasma panel 32" | |
| Native Screen Resolution | 852 x 480 | |
| Television system | SECAM/PAL | |
| Sound system | BG / DK / I/L/L' | |
| Channel coverage | VHF-L: E2-S8<br>VHF-H: S9-S37<br>UHF: S38-E69 | |
| PC mode (DB15) | 60Hz<br>640 x 480, 800 x 600, 1024 x 768 | |
| YPBPR mode | 50Hz<br>576 i/p, 720p, 1080i<br>60Hz<br>480i /P，720p, 1080i | |
| HDMI mode | RGB 640 x 480, 800 x 600, 1024 x 768<br>YPBPR 50Hz<br>576p, 720p, 1080i<br>YPBPR 60Hz<br>480p; 720p, 1080i | |
| Static contrast ratio | 50 : 1 | |
| Brightness | 500 cd/m² | |
| Viewing angle | 140° (H/V) | |
| Power source | AC 100V-240V，50/60Hz | |
| Power consumption | 190W | |
| Audio output | 2 x 5 watts | |
| Audio filter | Equalizer 5 x bands | |
| Connection interface | RF Input: | RF Antenna x 1 |
| | Video Input: | YUV x 1 ,S-Video x 1,AV x 2 |
| | Graphic Input: | PC analog (DB15) x 1,HDMI x 1 (HDCP) |
| | Audio Input: | YUV/ PC analog x 1 ,S-Video /AV1 x 1, AV2 x 1 |
| | Audio Output: | audio output x 1<br>headphone x 1 (Jack 3,5mm) |
| | Video Output: | video output x 1 |
| | Other: | |
| Dimensions | 838mmX647mmX240mm (LXWXH)<br>(including stand) | |

# PDP panel spec

## 1. General description

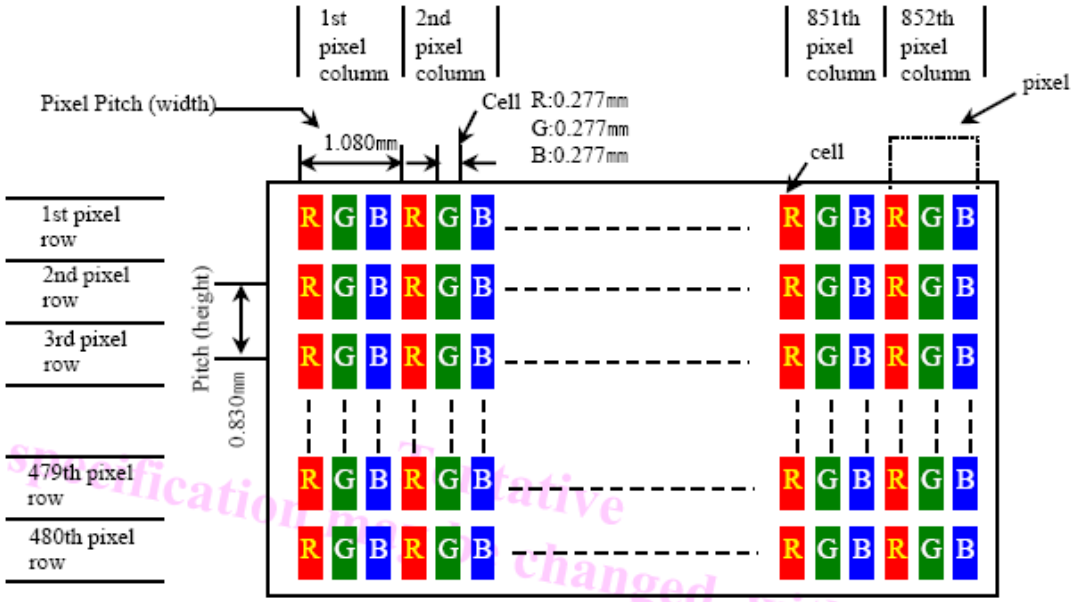
The PDP32F1#### requires only 8/10bits of digital video signals for each RGB color.
In addition to the video signals, six different DC voltages are required to operate the display.

### ❑ GENERAL SPECFICATIONS

| | |
|---|---|
| ✓ Model Name | : PDP32F1#### (32F1#### Model) |
| ✓ Number of Pixels | : 852(H) × 480(V) (1pixel=3 RGB cells) |
| ✓ Pixel Pitch | : 831㎛ (H) × 830㎛ (V) |
| ✓ Cell Pitch | : 277㎛ (H) × 830㎛ (V) (Green Cell basis) |
| ✓ Display Area | : 708.01(H) × 398.4(V) ±0.5mm |
| ✓ Outline Dimension | : 790(H) × 466.5(V) × 59.1(D)±1mm |
| ✓ Pixel Type | : RGB Closed type (well) |
| ✓ Number of Gradations | : (R)1024 × (G)1024 × (B)1024 |
| ✓ Weight | : 8.05 Kg ± 0.5 Kg (Net 1EA)<br>123.5Kg ± 5 Kg (12EA/1BOX) |
| ✓ Aspect Ratio | : 16:9 |
| ✓ Practical Brightness | : Typical 550cd/㎡ (25% White Window) |
| ✓ Contrast Ratio | : Average 50:1 (In a bright room with 100Lux at center) |
| ✓ Power Consumption | : Typical 160 W (Full White) Max.200W (With PSU 250W) |
| ✓ Expected Life-time | : more than 60,000 Hours of continuous operation |

☞ Life-time is defined as the time when the brightness becomes half of its initial value.

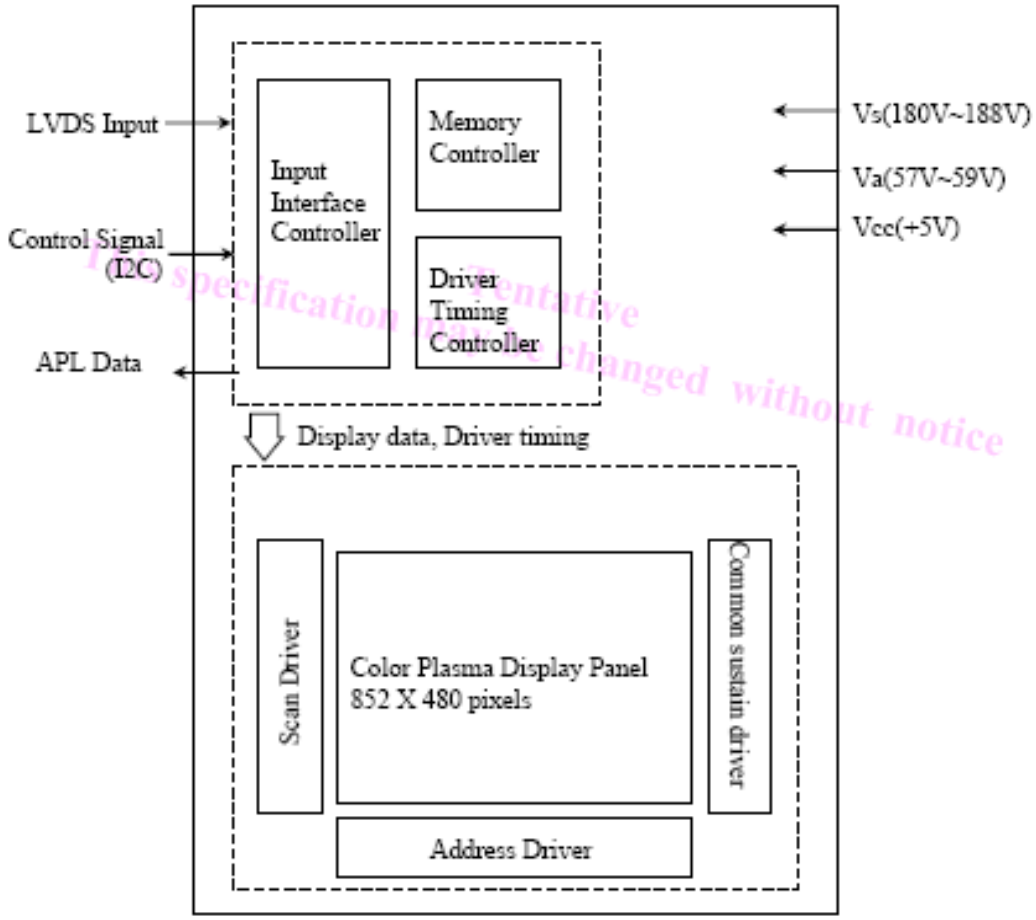
✓ Display Dot Diagram




This specification may be changed without no

## 2. Panel block diagram

❑ BLOCK DIAGRAM



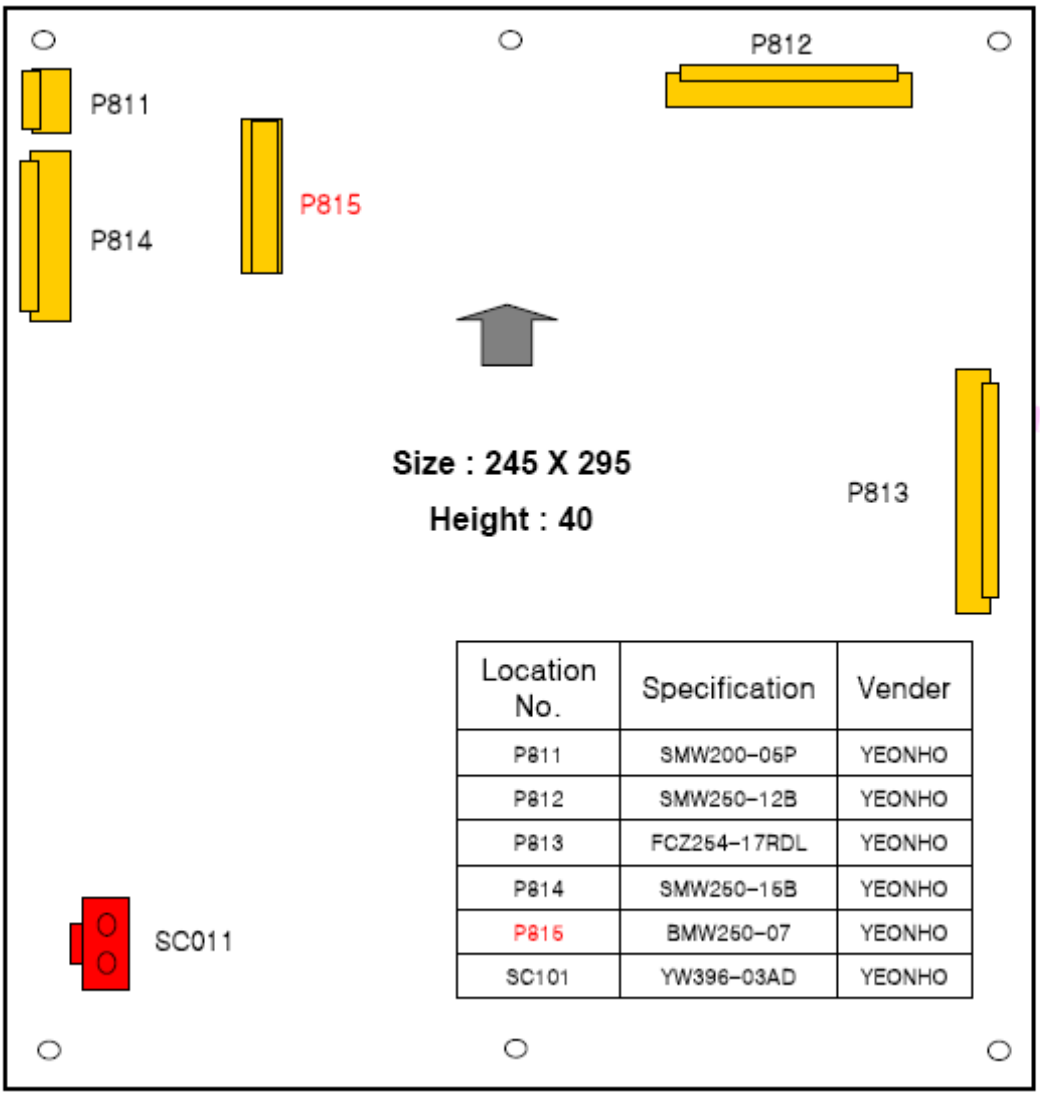

☞ Applied Voltage level is specified at the time when Full-White pattern is displayed on the panel.

This specification is tentative and may be changed without notice

## 3.Power (PSU) description

| | |
|---|---|
| Standard Voltage Range | AC 100V ~ 240V |
| Available Voltage Range | AC 90V ~ 265V |
| Frequency Range | 50Hz ~ 60Hz(± 5Hz) |

## 4.Power block diagram

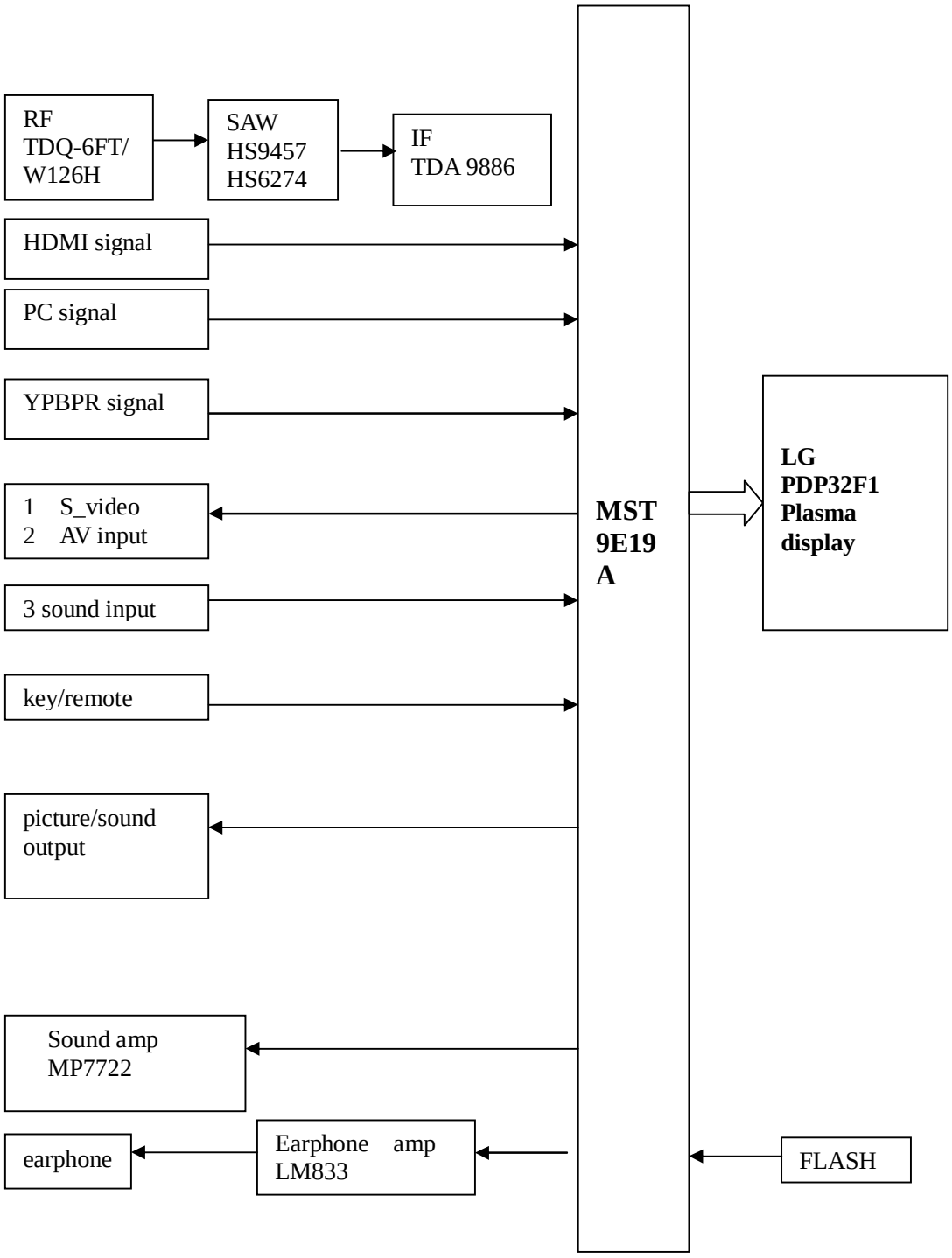



| Location No. | Specification | Vender |
|---|---|---|
| P811 | SMW200-05P | YEONHO |
| P812 | SMW250-12B | YEONHO |
| P813 | FCZ254-17RDL | YEONHO |
| P814 | SMW250-15B | YEONHO |
| P815 | BMW250-07 | YEONHO |
| SC101 | YW396-03AD | YEONHO |

# Block Diagram

The signal board is composed by the main board .The main chip for video decoder is MST9E19A produced by MSTAR co., ltd.

## signal processing diagram



# Service Mode And Adjustment

## 1.Service mode

You can entry service mode menu by follow steps:

1. Press on the [MENU] key.
2. Select the sub-menu [PICTURE] with [CH∧/CH∨].(or sub-menu[SOUND])
3. Select the parameter [Brightness] with the keys [VOL∧/VOL∨]. (or balance)
4. Press a series of numbers [0] [5] [3] [2] quickly.

Note:The factory lock initial password is “0000”,the general password is “0532”.

SERVICE MODE MENU includes:
**Fac. Menu**

**Factory Menu**

**White Balance**
**Auto Calibration**
**LOGO**
**OSD Language**
**Country**
**Option**
**Factory Init**
**Test Pattern**
**Version:**

**White Balance**

| | |
|---|---|
| **R DRV** | **13** |
| **G DRV** | **7** |
| **B DRV** | **16** |
| **R CUT** | **116** |
| **G CUT** | **120** |
| **B CUT** | **118** |
| **BRIGHT_H** | **80** |
| **CONTRAST _H** | **80** |
| **BRIGHT_L** | **40** |
| **CONTRAST_L** | **40** |

**Auto Calibration**

| | |
|---|---|
| **Auto Color** | |
| **Color Temp.** | **Standard** |
| **RED COLOR** | **116** |
| **GREEN COLOR** | **120** |
| **BLUE COLOR** | **118** |

**LOGO**

**NULL**
**HISENSE**
**WELCOME**

**Option**

| | |
|---|---|
| SOURCE | TV |
| BRIGHT 0 | 10 |
| BRIGHT 50 | 110 |
| BRIGHT 100 | 132 |
| CONTRAST 0 | 60 |
| CONTRAST 50 | 125 |
| CONTRAST 100 | 170 |
| TOFAC | M |
| HDMI Cable | Standard |
| PIXSHIFTNUMBER | 1 |
| PIXSHIFTTIME | 30 |

**Factory Init**

QingDao
HuangDao
Guiyang
Hungary
France
Austria
CLEAR PROTECTLY
CLEAR UNPROTECTLY

**Test Pattern**

BLUE

**Version**

Version:
PDP3208_R1.00.20070811
Panel Type:
LG PDP32F1 (852*480)
FLASH :
EN25F80

**Design Menu**

**Picture Mode**
**Sound Mode**
**Sound Settings**
**Power Save**
**PIP Option**
**EMI**
**MOVESHARPNESS**
**LipSync**

**Picture Mode**

| | | |
|---|---|---|
| **Standard** | **Brightness** | **50** |
| | **Contrast** | **50** |
| | **Colour** | **45** |
| **Bright** | **Brightness** | **60** |
| | **Contrast** | **60** |
| | **Colour** | **55** |
| **Soft** | **Brightness** | **45** |
| | **Contrast** | **45** |
| | **Colour** | **45** |

**Sound Mode**

| | | |
|---|---|---|
| **Standard** | **120Hz** | **11** |
| | **500Hz** | **11** |
| | **1.5KHz** | **12** |
| | **5KHz** | **14** |
| | **10KHz** | **14** |
| **Music** | **120Hz** | **13** |
| | **500Hz** | **11** |
| | **1.5KHz** | **12** |
| | **5KHz** | **14** |
| | **10KHz** | **20** |
| **Speech** | **120Hz** | **6** |
| | **500Hz** | **9** |
| | **1.5KHz** | **14** |
| | **5KHz** | **14** |
| | **10KHz** | **14** |

**Sound Settings**

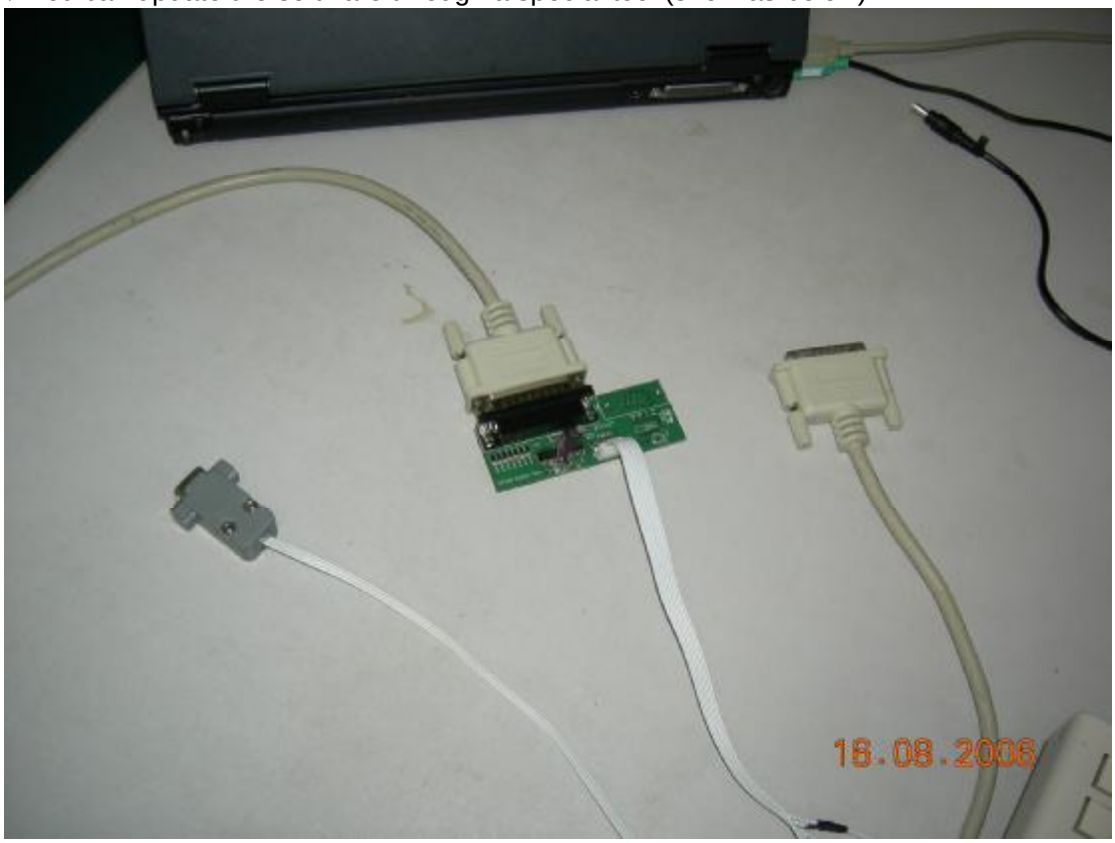
| | |
|---|---|
| **VOLUME 0** | **128** |
| **VOLUME 1** | **79** |
| **VOLUME 20** | **28** |
| **VOLUME 40** | **24** |
| **VOLUME 100** | **10** |
| **TVPRE SCALER** | **2** |
| **VOLUME SCALER** | **0** |

**NOTE:** We advise service hadn't better amend factory data, because it is better settings data. Please do not tell user the purpose password.

# Software updating

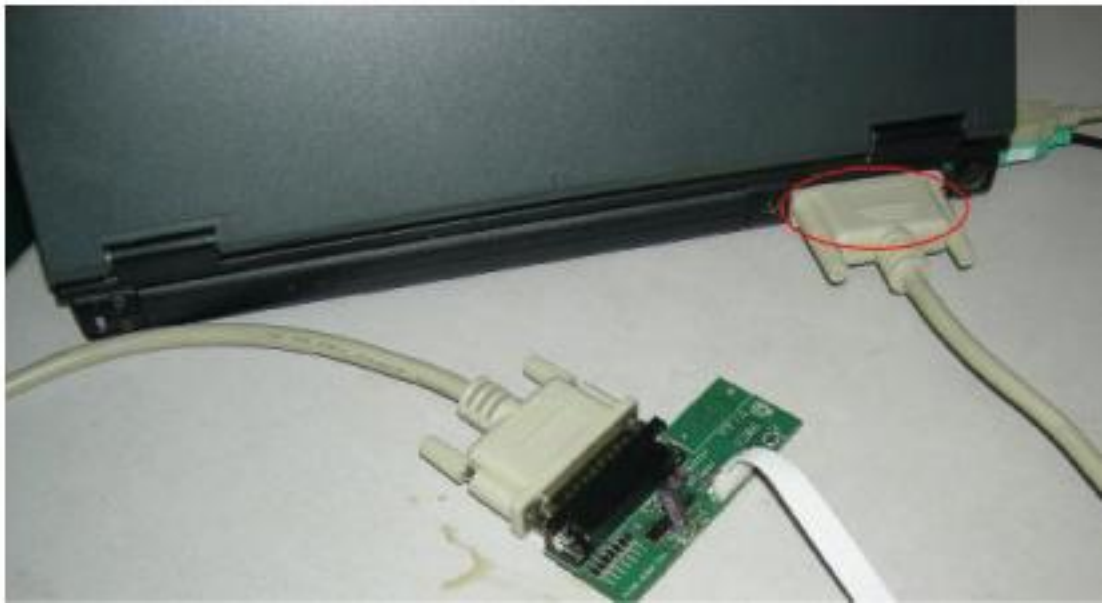
## PDP3208 software updating

1、You can update the software through a special tool (show as below)



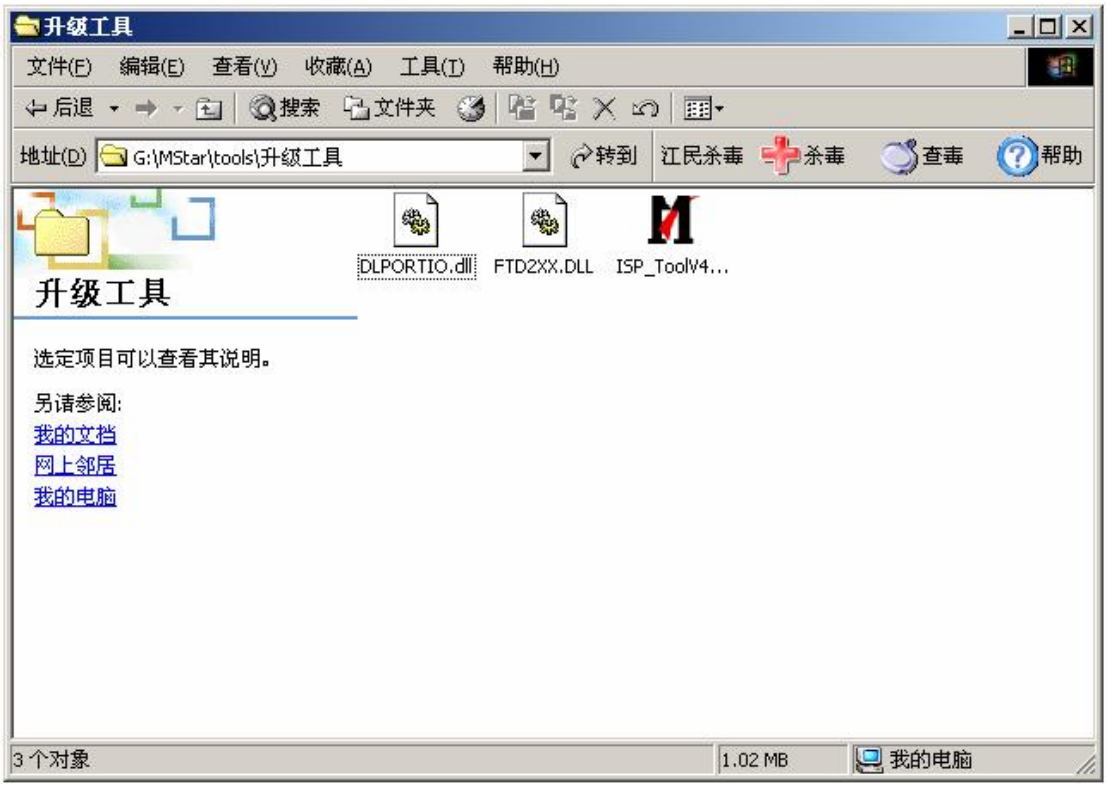

2、Software Updating Operation

1．Connect the Debug board to the TV use VGA interface, then connect the Debug board to the computer, just as the pictures showing.

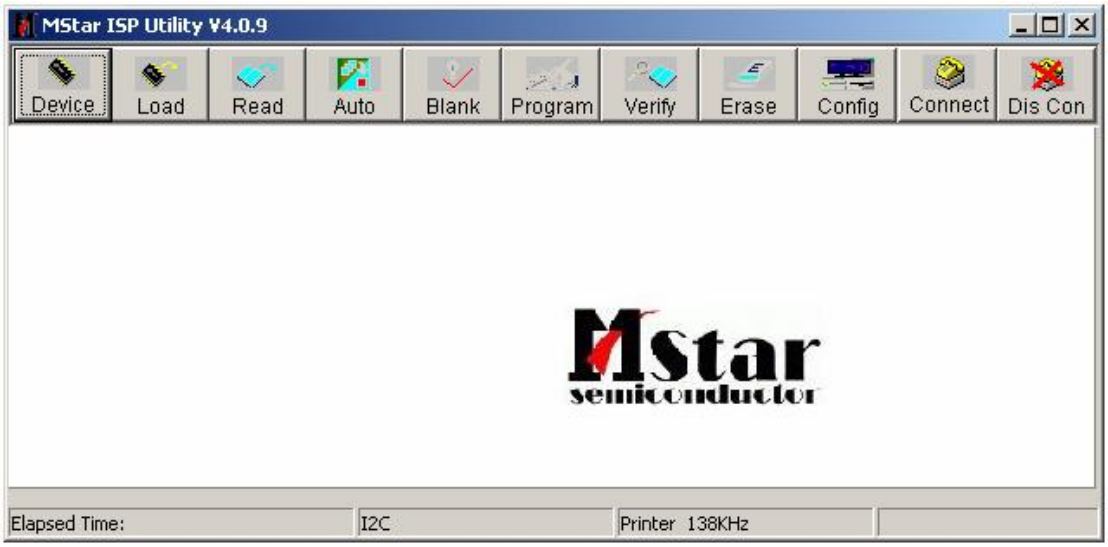


2. Set the ISP_TOOL4.0.9 -------only for the first time update.
DLPORTIO.dll and FTD2XX.DLL must be in the same folder
1）Find the folder where the ISP_TOOL4.0.9 lies in.

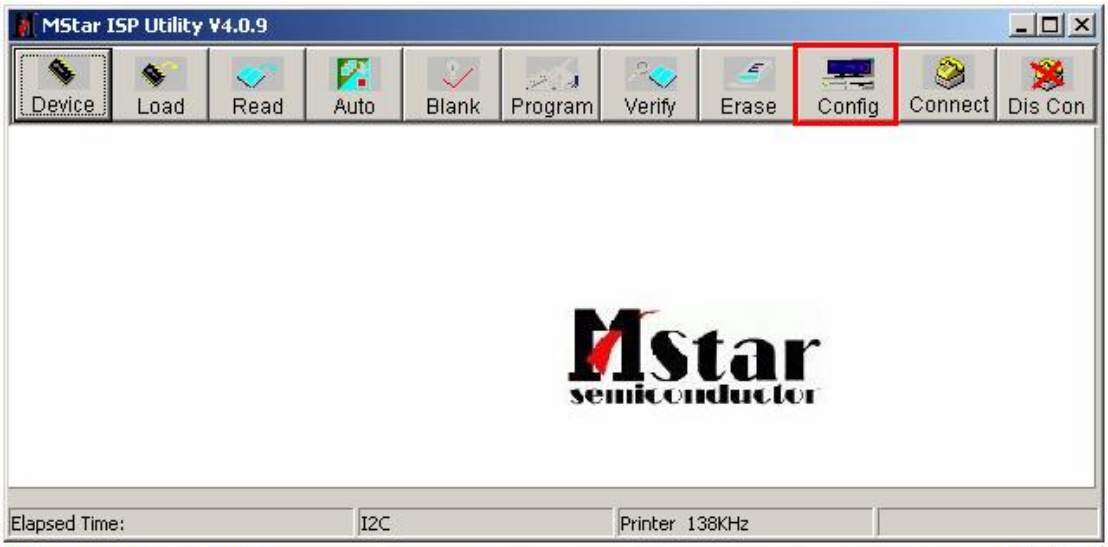
Note: DLPORTIO.dll and FTD2XX.DLL must be in the same folder.

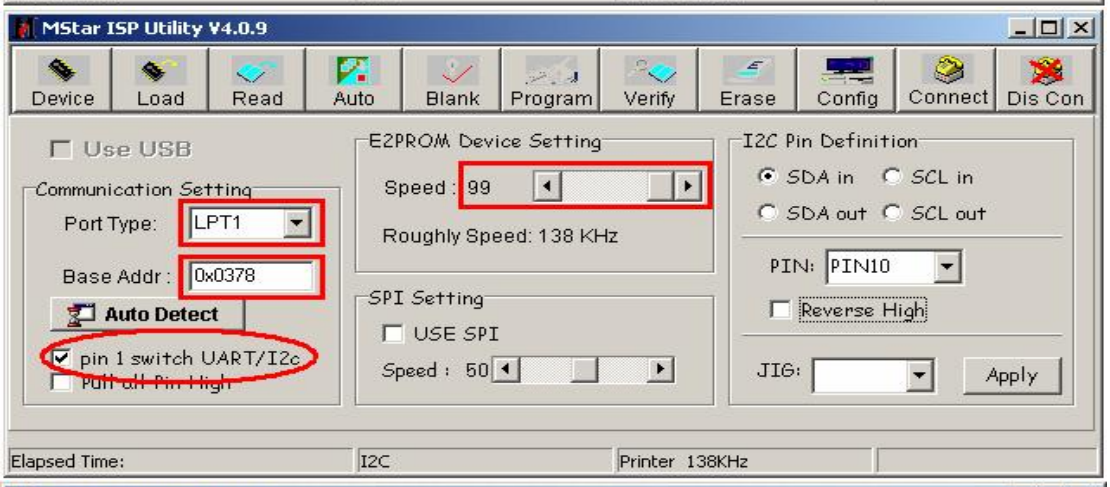


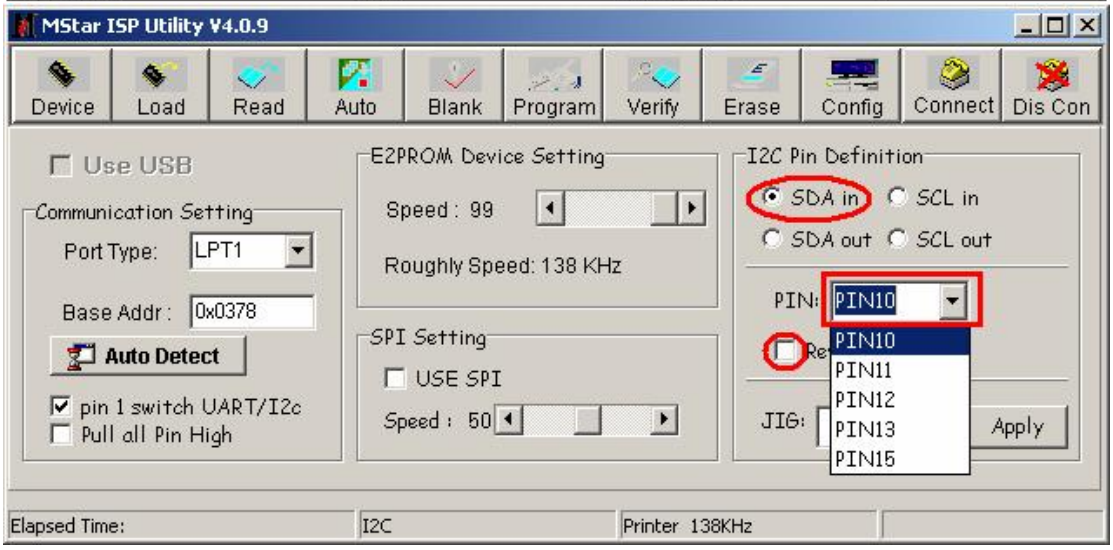

2）Double click the ISP_TOOL4.0.9 icon, and then a dialog will show as below.




3）Click the Config button. And then a dialog will show as below.
You should set the Config like what the picture shows.


MStar ISP Utility V4.0.9
Device
Load
Read
Auto
Blank
Program
Verify
Erase
Config
Connect
Dis Con
Mstar
semiconductor
Elapsed Time:
I2C
Printer 138KHz


MStar ISP Utility V4.0.9
Device
Load
Read
Auto
Blank
Program
Verify
Erase
Config
Connect
Dis Con
Use USB
Communication Setting
Port Type: LPT1
Base Addr: 0x0378
Auto Detect
pin 1 switch UART/I2c
Pull all Pin High
E2PROM Device Setting
Speed: 99
Roughly Speed: 138 KHz
SPI Setting
USE SPI
Speed: 50
I2C Pin Definition
SDA in
SCL in
SDA out
SCL out
PIN: PIN10
Reverse High
JIG:
Apply
Elapsed Time:
I2C
Printer 138KHz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Verify
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SPI Setting
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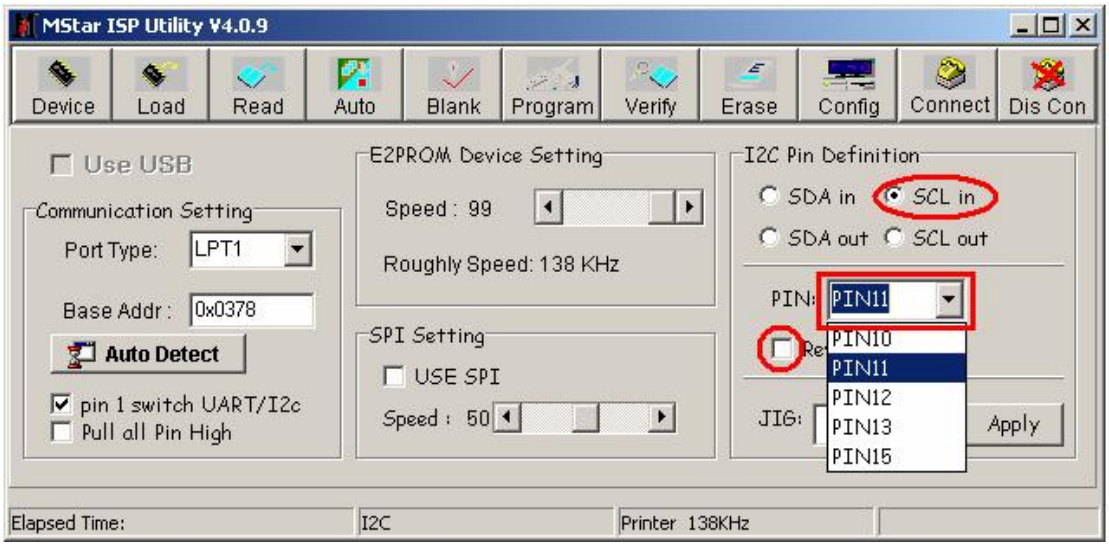
Speed: 50
I2C Pin Definition
SDA in
SCL in
SDA out
SCL out
PIN: PIN10
PIN10
PIN11
PIN12
PIN13
PIN15
JIG:
Apply
Elapsed Time:
I2C
Printer 138KHz


MStar ISP Utility V4.0.9
Device
Load
Read
Auto
Blank
Program
Verify
Erase
Config
Connect
Dis Con
Use USB
Communication Setting
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Base Addr :
0x0378
Auto Detect
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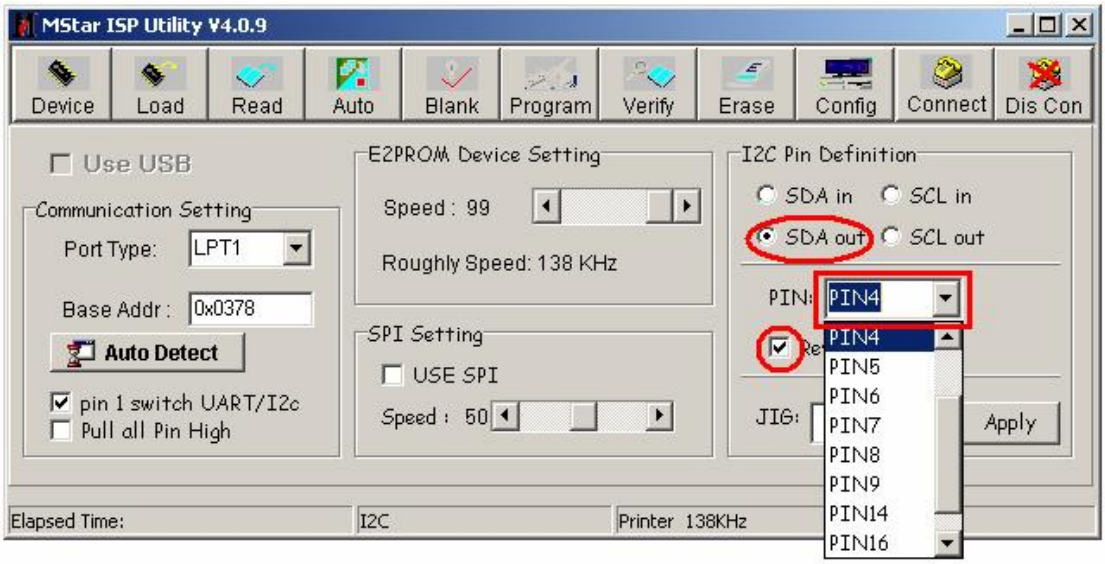
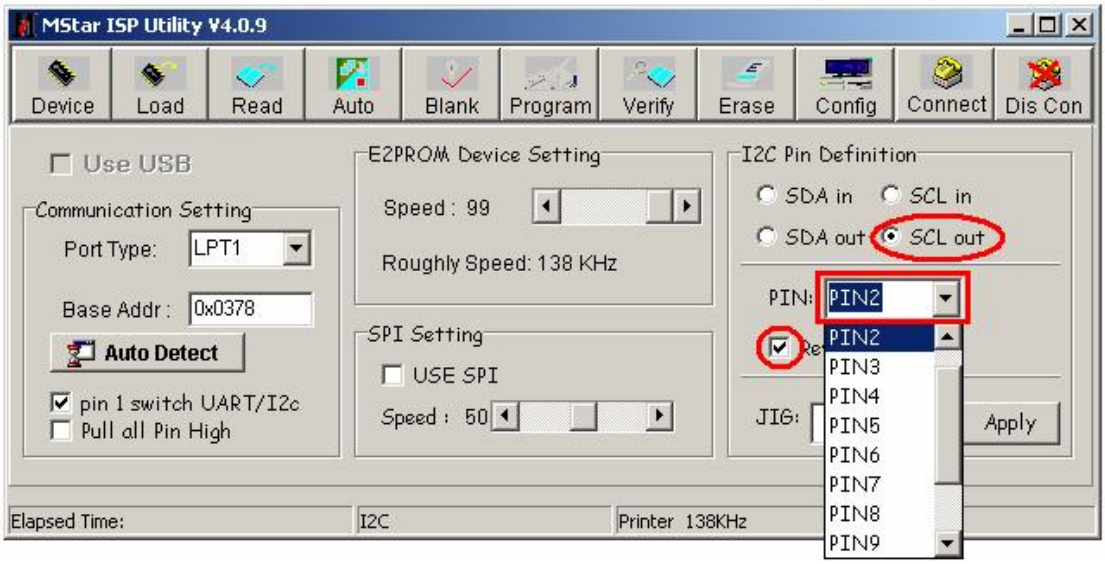
E2PROM Device Setting
Speed : 99
Roughly Speed: 138 KHz
SPI Setting
USE SPI
Speed : 50
I2C Pin Definition
SDA in
SCL in
SDA out
SCL out
PIN:
PIN11
PIN10
PIN11
PIN12
PIN13
PIN15
JIG:
Apply
Elapsed Time:
I2C
Printer 138KHz


MStar ISP Utility V4.0.9
Device
Load
Read
Auto
Blank
Program
Verify
Erase
Config
Connect
Dis Con
Use USB
Communication Setting
Port Type:
LPT1
Base Addr :
0x0378
Auto Detect
pin 1 switch UART/I2c
Pull all Pin High
E2PROM Device Setting
Speed : 99
Roughly Speed: 138 KHz
SPI Setting
USE SPI
Speed : 50
I2C Pin Definition
SDA in
SCL in
SDA out
SCL out
PIN:
PIN4
PIN4
PIN5
PIN6
PIN7
PIN8
PIN9
PIN14
PIN16
JIG:
Apply
Elapsed Time:
I2C
Printer 138KHz


MStar ISP Utility V4.0.9
Device
Load
Read
Auto
Blank
Program
Verify
Erase
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Dis Con
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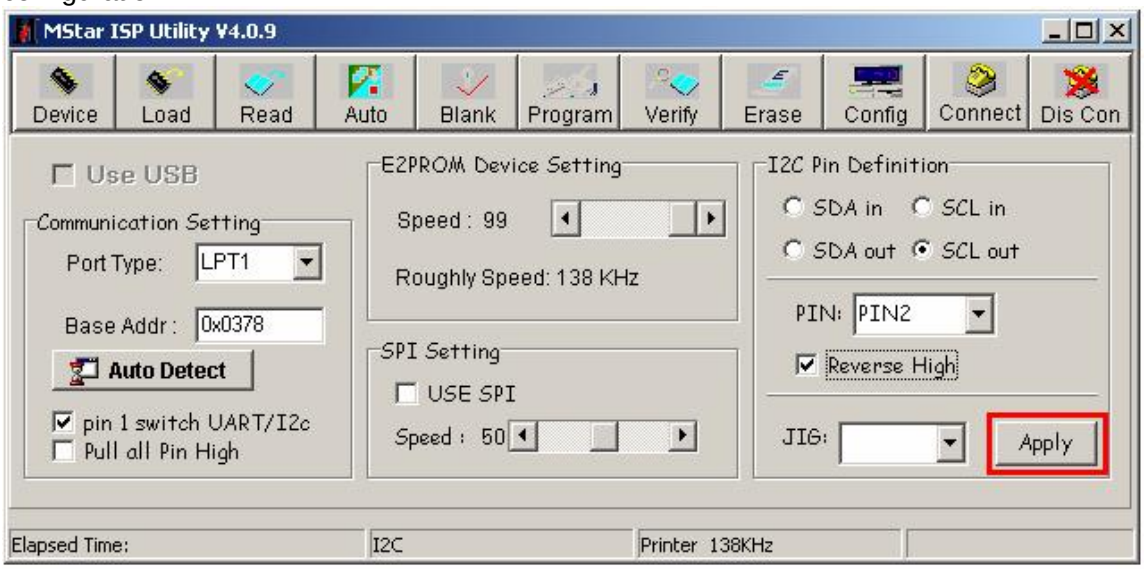
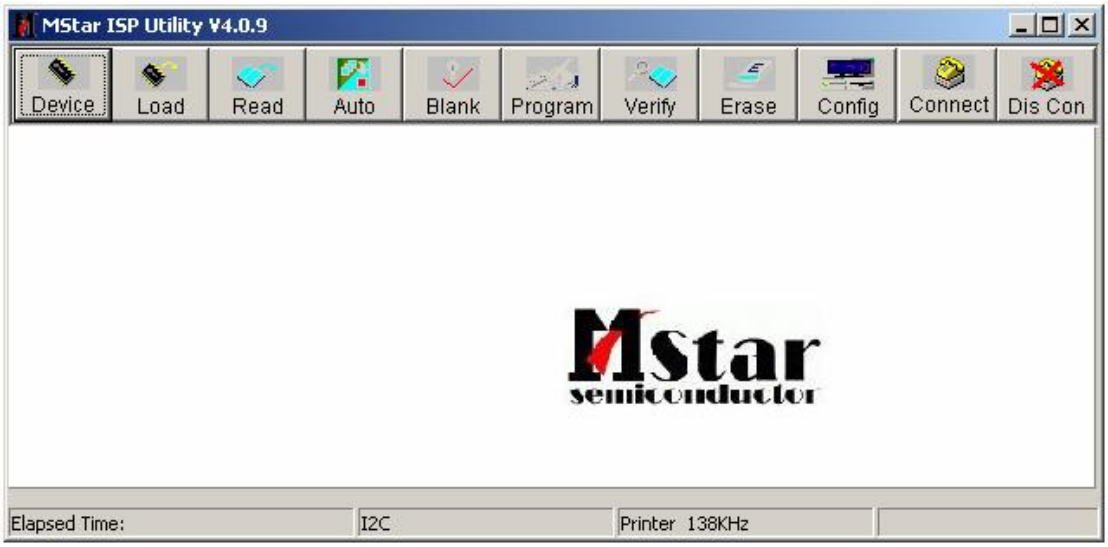
Port Type:
LPT1
Base Addr :
0x0378
Auto Detect
pin 1 switch UART/I2c
Pull all Pin High
E2PROM Device Setting
Speed : 99
Roughly Speed: 138 KHz
SPI Setting
USE SPI
Speed : 50
I2C Pin Definition
SDA in
SCL in
SDA out
SCL out
PIN:
PIN2
PIN2
PIN3
PIN4
PIN5
PIN6
PIN7
PIN8
PIN9
JIG:
Apply
Elapsed Time:
I2C
Printer 138KHz

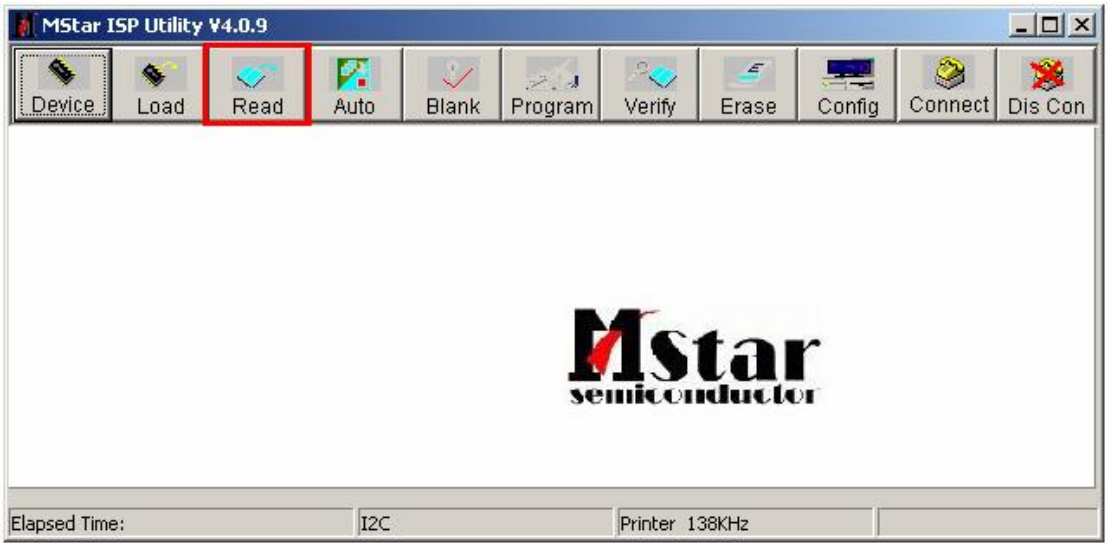
4) After you have finished all above, you should click the Apply button to complete the configuration.

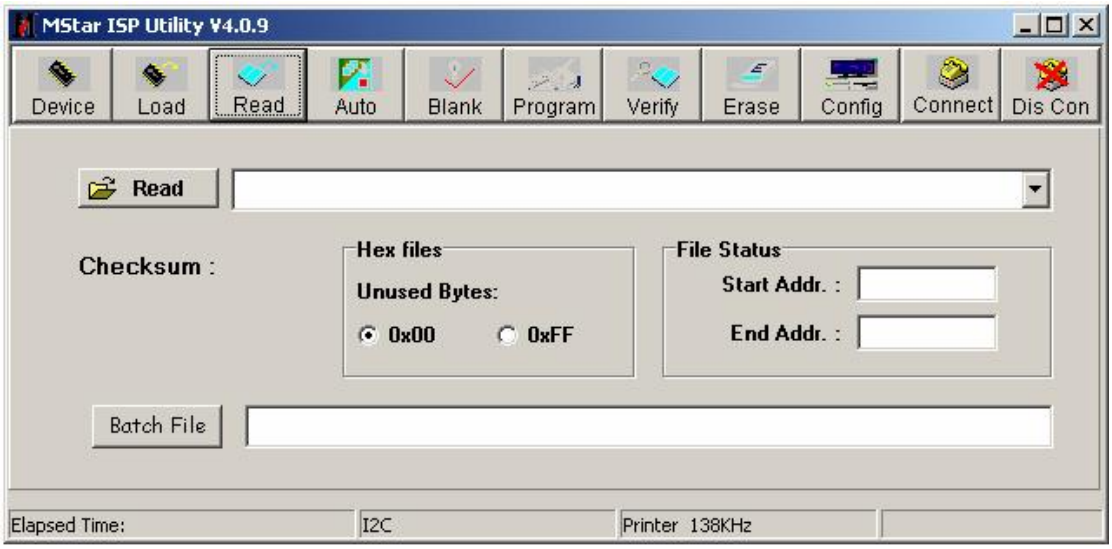


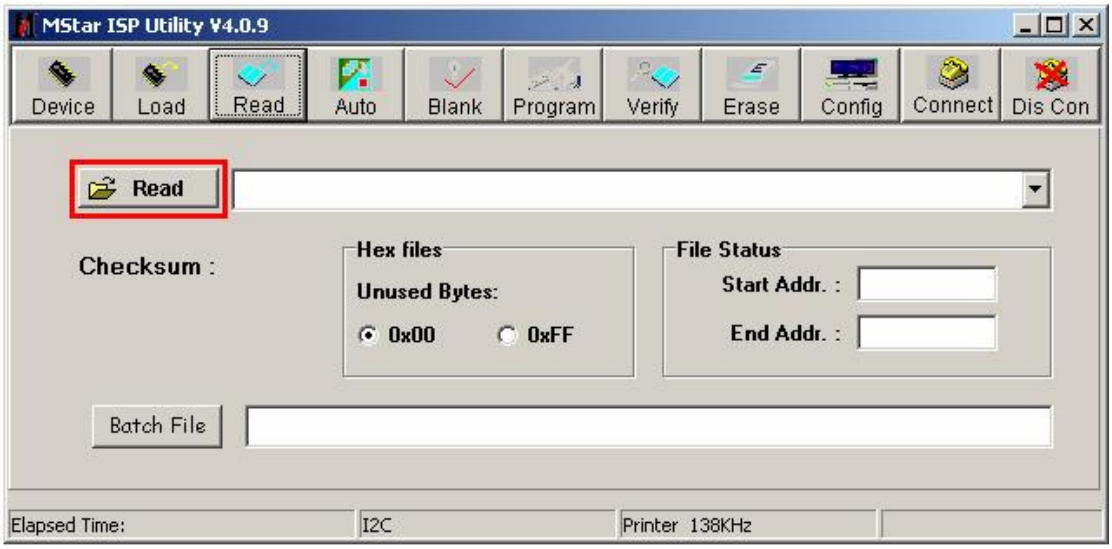

3. Turn on the TV, then we can update.
4. Double click the ISP_TOOL4.0.9 icon, and then a dialog will show as below.



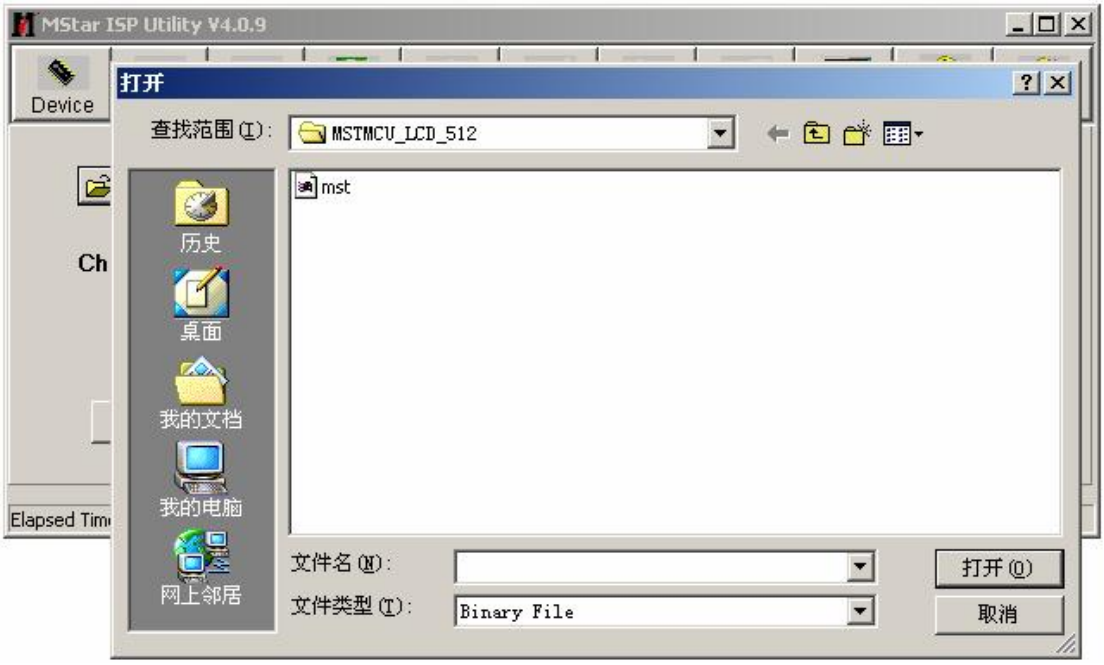

5. Click the Read button. And then do as shown below.

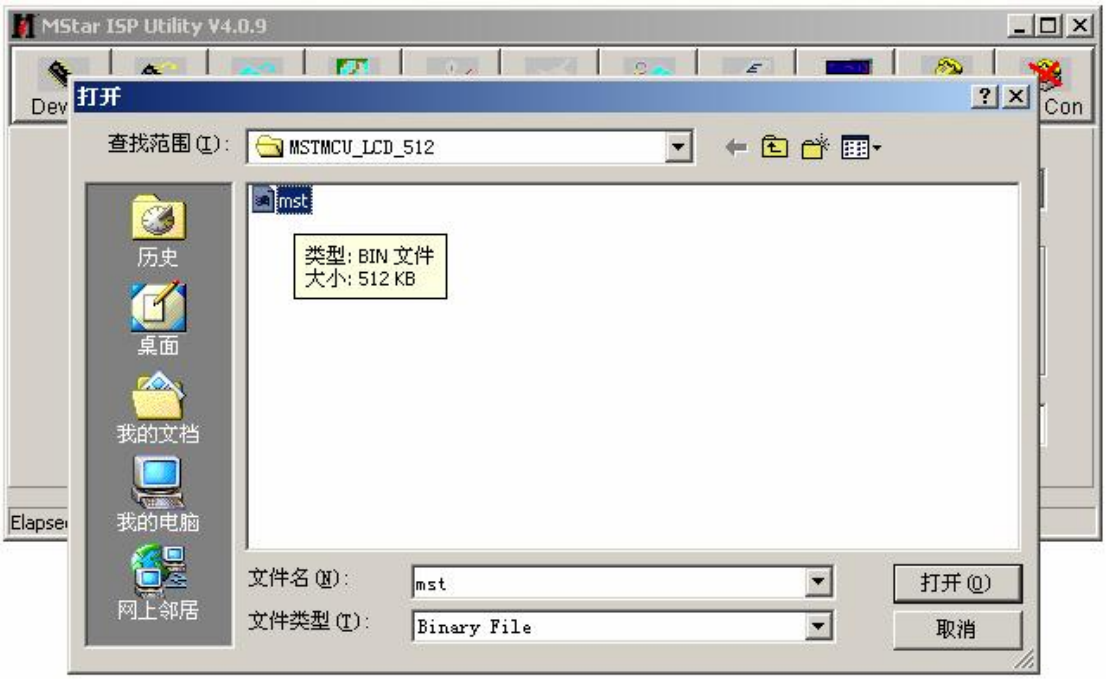


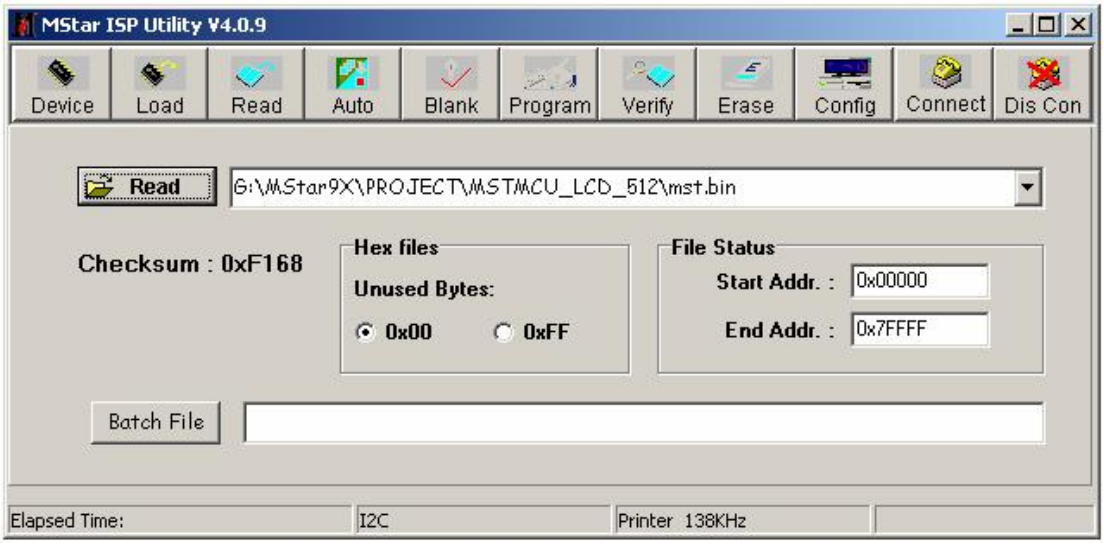




6. Find the update file in your computer.

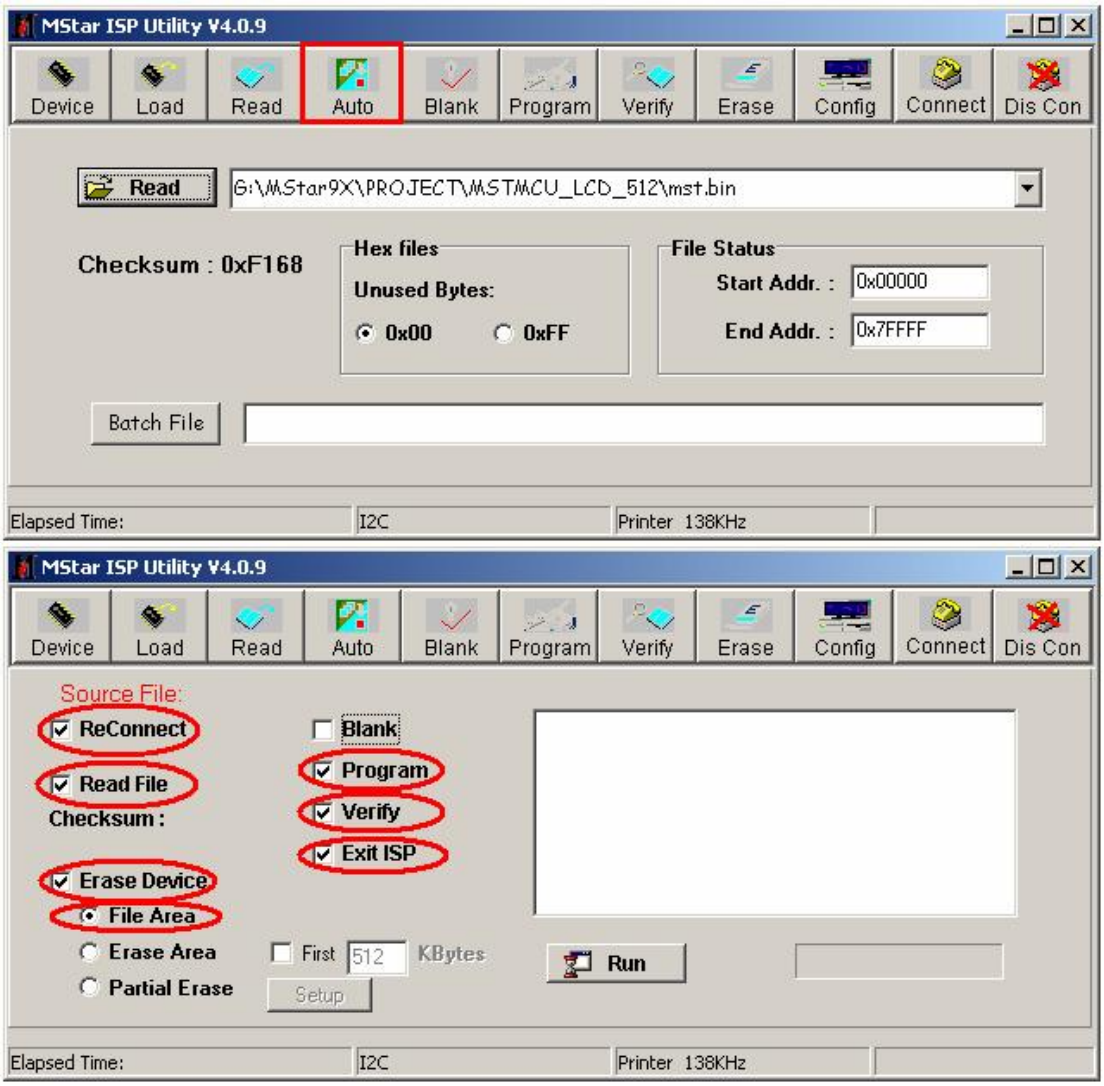


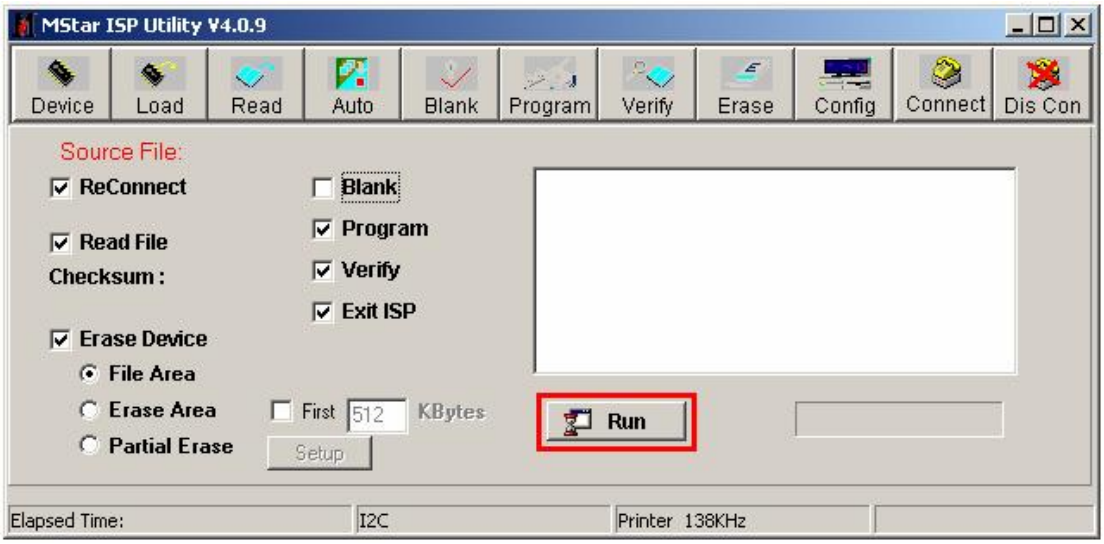



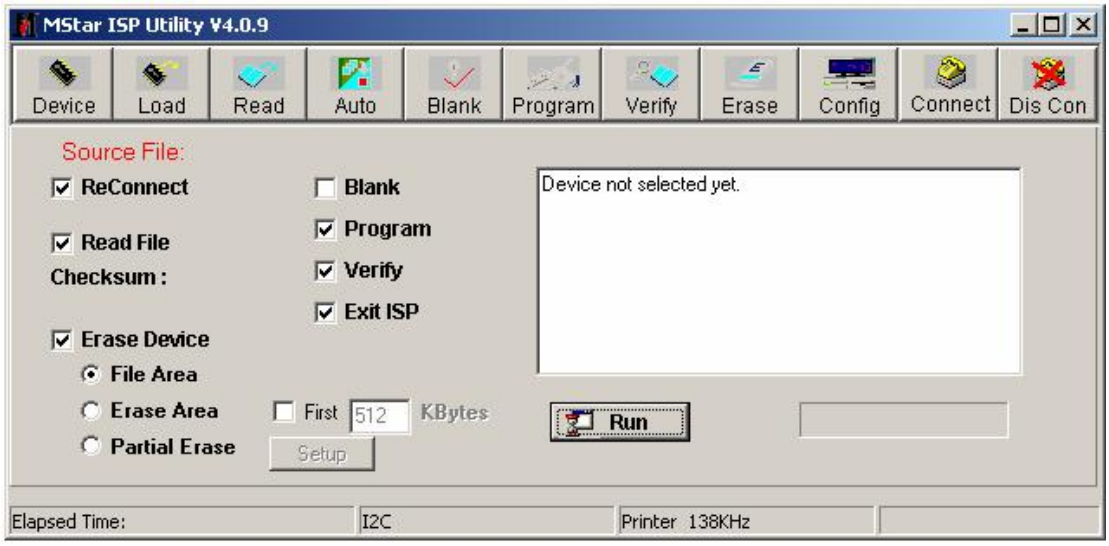

7. Double click the update file. A dialog will show as below.




8. Click the Auto button. And then do as shown below.

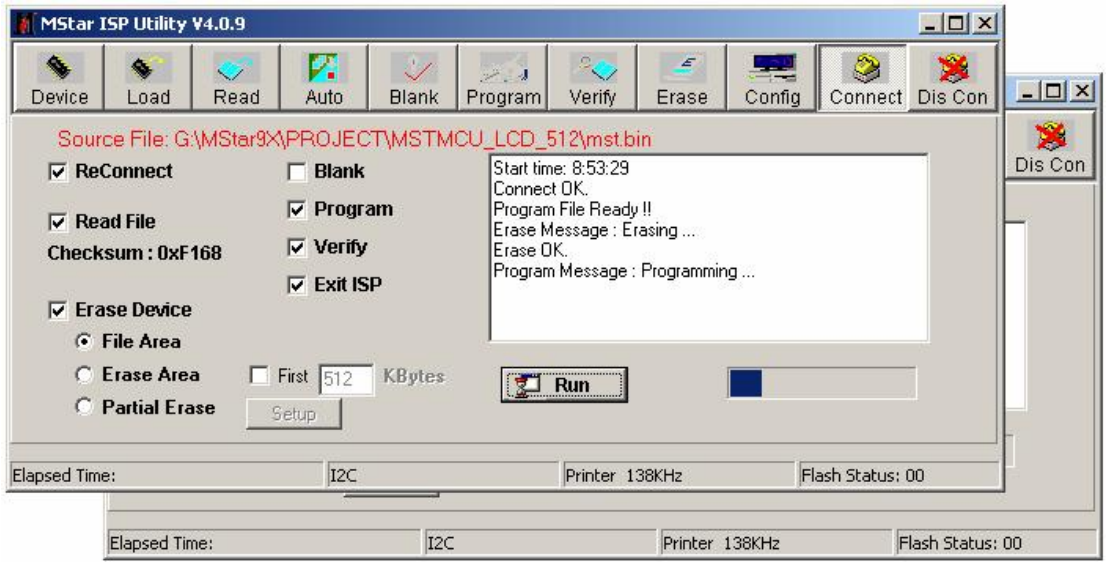




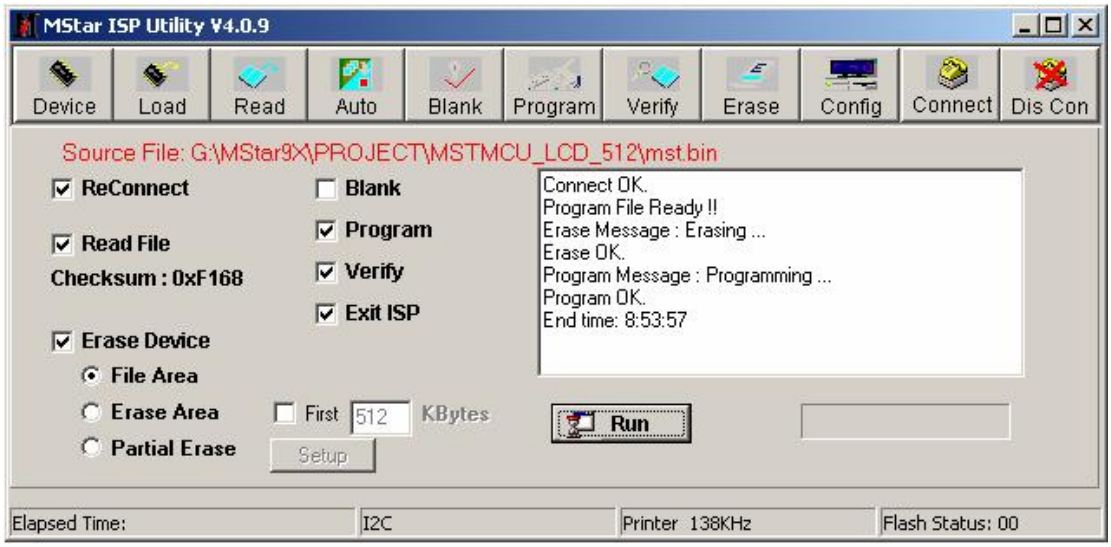




9. Click the Connect button. And then do as shown below.

10. Click the Run button.




11. When the update is finished, a dialog will show as below.



# PDP3208 Explode View and Bom

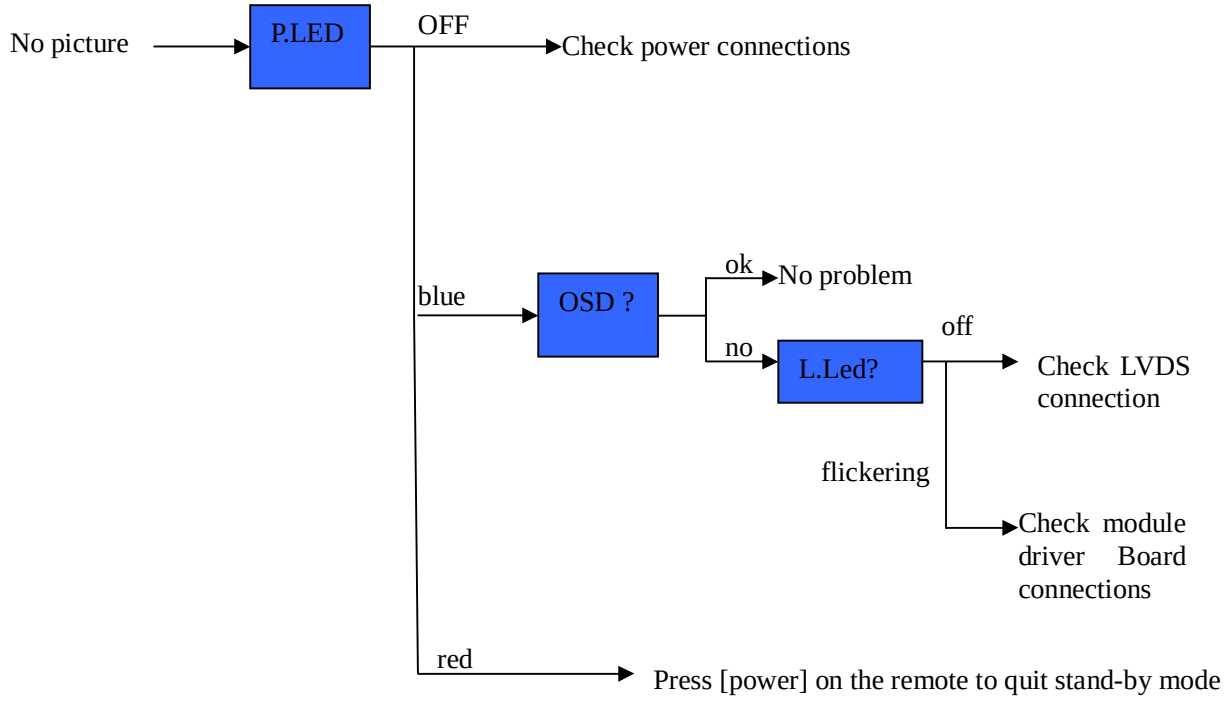
## Spare Parts List

Main Spare Parts

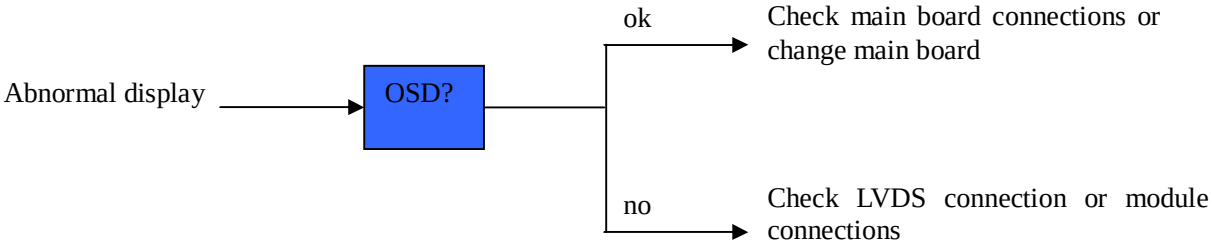
| | Name | Type | Part No. |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |

# Troubleshooting

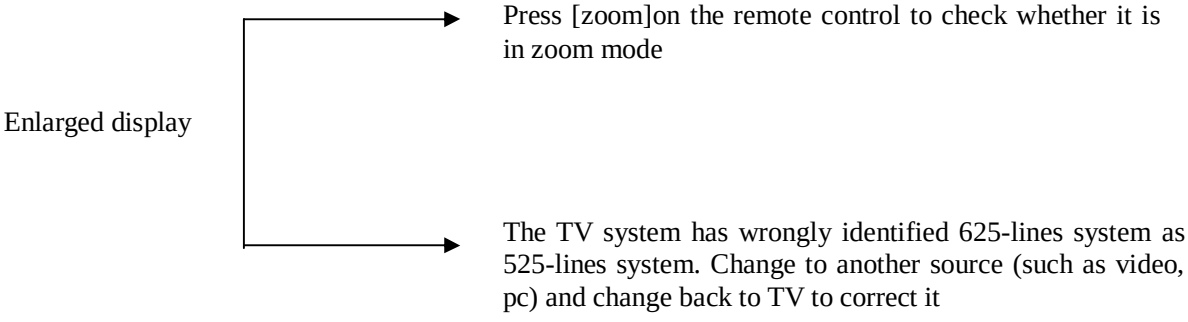
**1.**



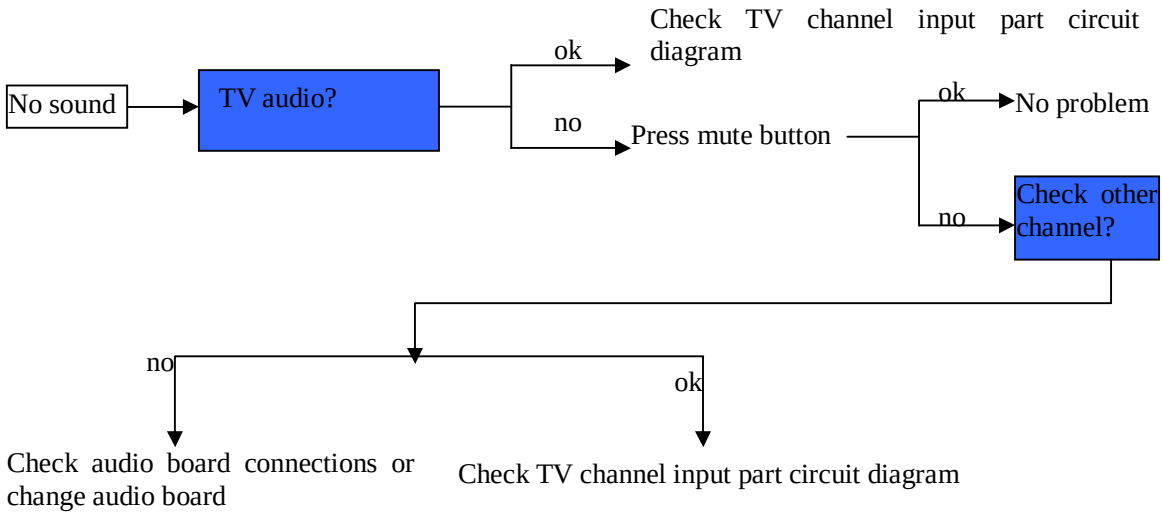

**2.**



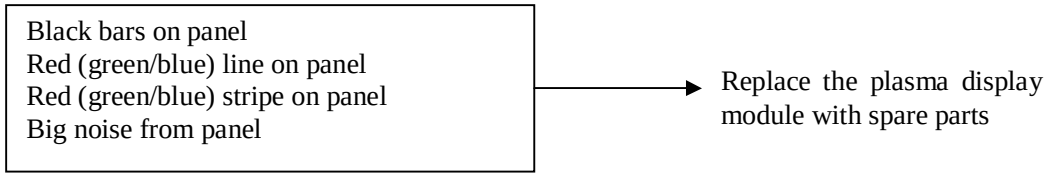

**3.**


Enlarged display
Press [zoom]on the remote control to check whether it is in zoom mode
The TV system has wrongly identified 625-lines system as 525-lines system. Change to another source (such as video, pc) and change back to TV to correct it

**4.**




5.


Black bars on panel
Red (green/blue) line on panel
Red (green/blue) stripe on panel
Big noise from panel
Replace the plasma display module with spare parts

**Note:**

p.LED?

Power indicator at the centre of the front panel. Normal state : blue; remote command state: blue flickering.

L.LED?

LVDS indicator on the logic processing board. Normal state: yellow flickering.

OSD?

Press [MENU] to display menu on the screen.

**Problem solutions**:

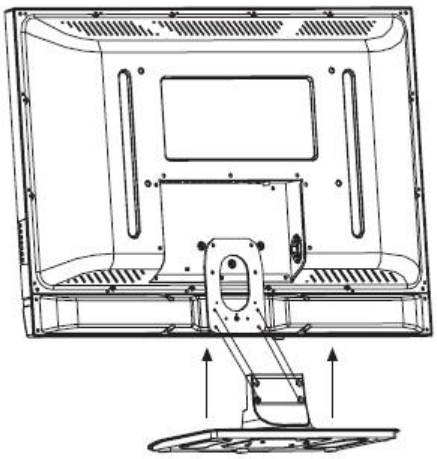
1. Adjusting sharpness can improve picture definition.
2. Adjusting bright can improve picture administrative levels, it can display black background something.
3. If VGA or YPBPR color isn't natural. You can optimize VGA.
4. PDP power is very large system. As you power off power. Power component must discharge period of time. Power can work steadily. If you power off and power on TV continuously. Then power work unsteadily. Then PDP TV will display deviant picture.
5. TV, AV and S.video are the same white balance setting. VGA is a set white balance setting. HDTV is a set white balance setting.
6. Picture mode does be divided four modes. such as standard, brightness, soft and custom. If you adjust factory data, they will increase the same data.
7. If TV don't work normally, it will take place follow some phenomena.

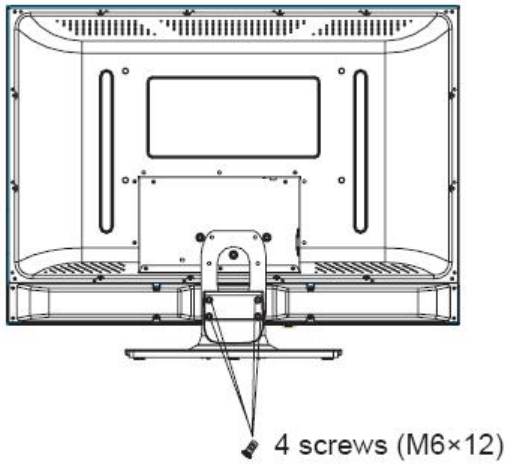
| No. | Trouble | Measure |
|---|---|---|
| 1 | Turn on the TV, The LED is red, no display on screen | Replace the main board or updating the software. |
| 2 | Turn on the TV, The LED is blue, but no picture or/and no sound | You should to replace the main board. |
| 3 | In TV state, can not to tuning | You should to replace the main board. |
| 4 | No teletext | You should to replace the main board. |
| 5 | No sound | You should to replace the main board. |
| 6 | can not to updating software | You should to replace the main board |
| 7 | No reaction with PC | You should change the main board |

8. If the picture color is not correct in the scart1 RGB source, but the scart1 CVBS is normal .you can check the fast blank signal is whether high. If it is low, please check the circuit.
9.If the picture is not normal 16:9 mode or 4:3 mode when the signal equipment send 16:9 mode or 4:3 mode, please check the aspect mode whether is in "normal" mode.

# Stand installing

Assemble instruction
Mount Installation
Mount Preparation
Should you choose on-the-table watching mode, please install the base following the below steps:
1. Spread cloth (or other soft materials) on one smooth surface which can support enough pressure, to avoid damaging TV screen.
2. Lay this unit stably with screen downside.
3. Take out the base and assemble it with four screws (M6×12) as illustrated.
NOTE: Failure to do so may result in breaking, denting and scratching the plasma display.



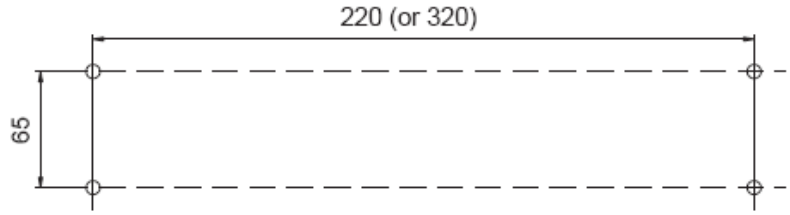


**PDP Wall-mounting Bracket Installation Guide**

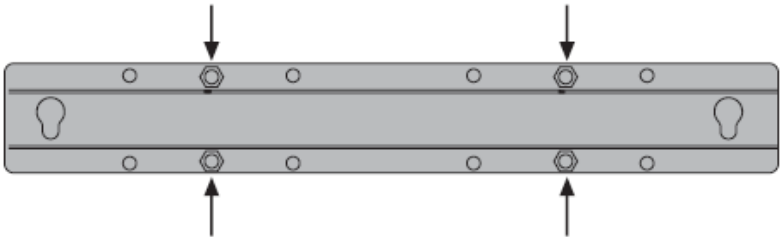
## Wall bracket installation instruction

If the user need wall bracket means, please install it as follows:

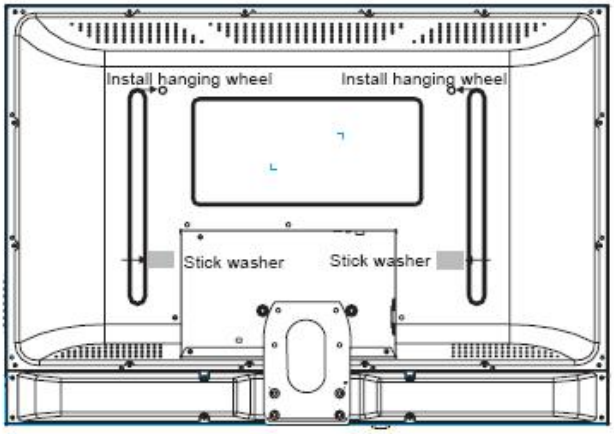
1. Drill the holes by the size as illustrated (220×65 or 320×65) and insert the expansive bolts (M8×70).



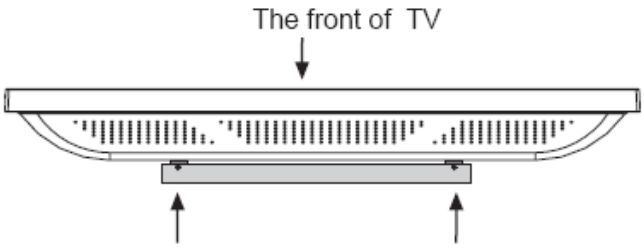

2. Fix the expensive bolts onto the wall bracket.



3. Install 2 hanging wheels onto the back cover, and stick 2 washers onto the positions as illustrated.
   **Attention:** Please do not hang the TV with the two bottom holes only!

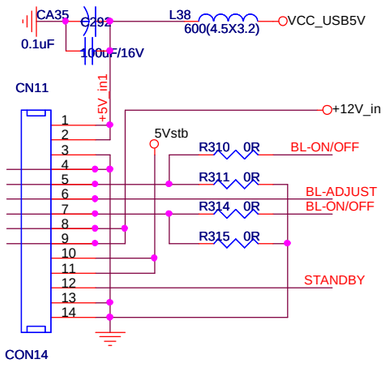


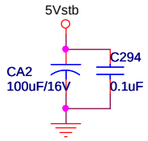
4. Hang the whole unit with hanging wheels on the fixed wall bracket, at the top of which was tightened with screws M4x35 to avoid the accidental fall of the whole unit off the wall bracket.

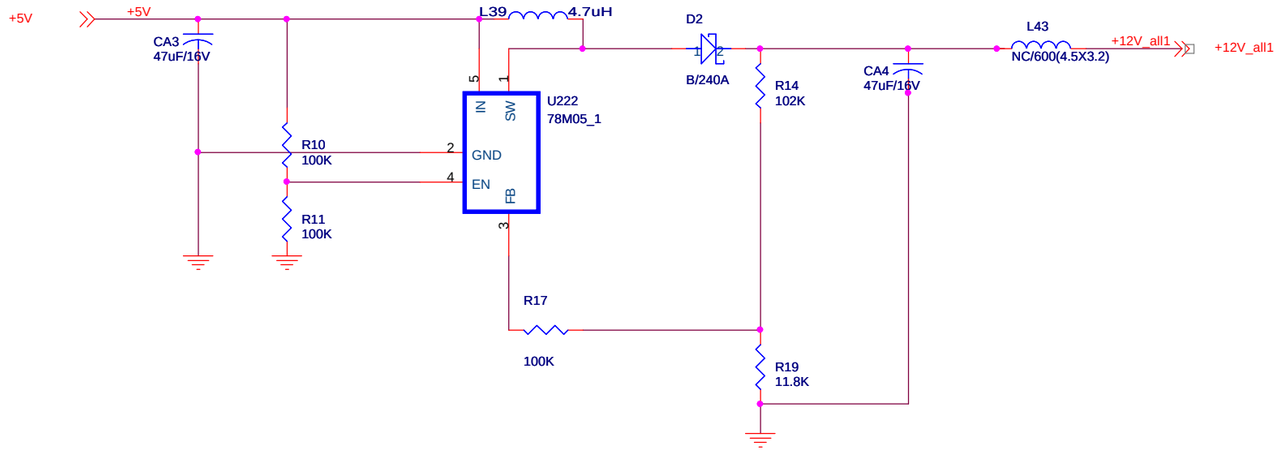


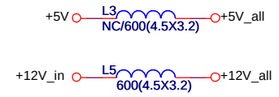

**Attentions:**

1. **Do not attempt to install the TV by yourself. Refer all installation to qualified servicing personnel.**
2. **Do not install the TV on a sloping wall that makes the TV screen slant over 10 degrees from the vertical or it may tumble.**
3. **Before installation, examine whether the wall conforms to the specifications and whether the supplied parts can be fixed to it. e.g. cement wall or brick wall. Do not attempt to install the TV on a flexible wall such as sheetrock wall or plaster wall, etc. If the rigidity of the wall can not be measured, every mounting hole should sustain axial normal stress over 100N and shearing stress over 200N.**
4. **Use the provided spare parts to fix. Do not change the screw specifications at will.**
5. **Drilling in the wall should be carried out as required and the drilling holes should conform to the specifications. (Stipulated in the installation steps.) Otherwise, it may cause hidden danger.**
6. **To avoid fire and shock, do not place a radiator, heater or humidifier, etc. below the installed TV.**
7. **The TV should be kept away from moisture, sensors and power line. Or it may cause electric conduction, the electric shock or the resonating accident.**
8. **Do not install the TV in the place where there are other power input and where it is easy to crash, or produces vibration.**
9. **After the whole unit has been installed well, do not put any external force onto the whole unit to avoid the fall of it.**
10. **Make sure the power is cut off before installation; during the installment, keep the screen from hard objects or other sharp ones.**
11. **If you want to move this unit after installation, please contact the professional technicians.**

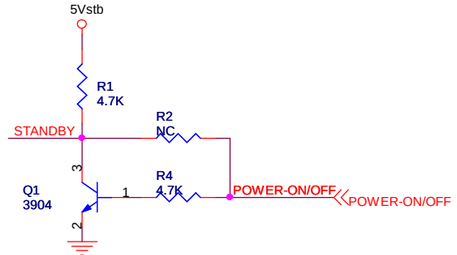


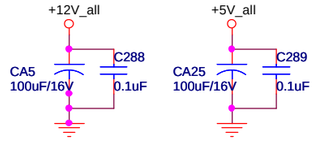



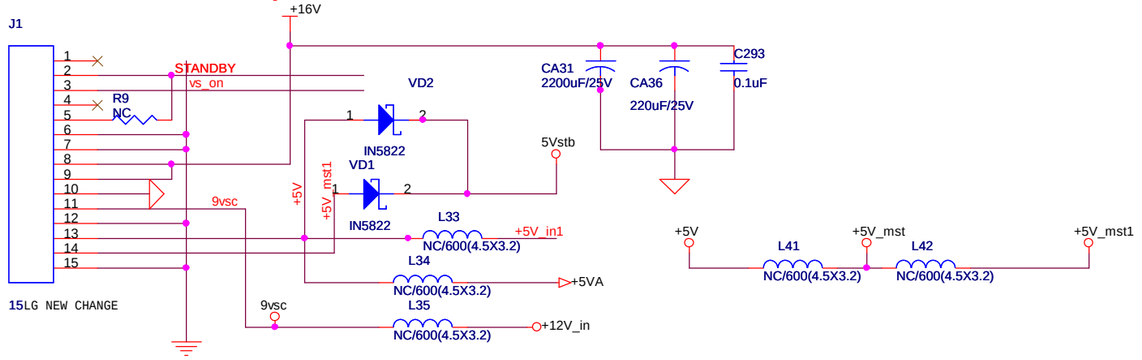



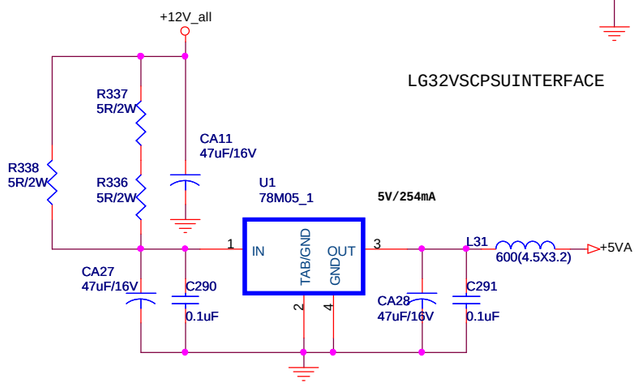

| | |
|---|---|
| +12V_in | 12V电源 |
| +5V_stb | 待机5V |
| BL-ON/OFF | 背光开关 |
| BL-ADJUST | 背光亮度 |
| STANDBY | 待机 |



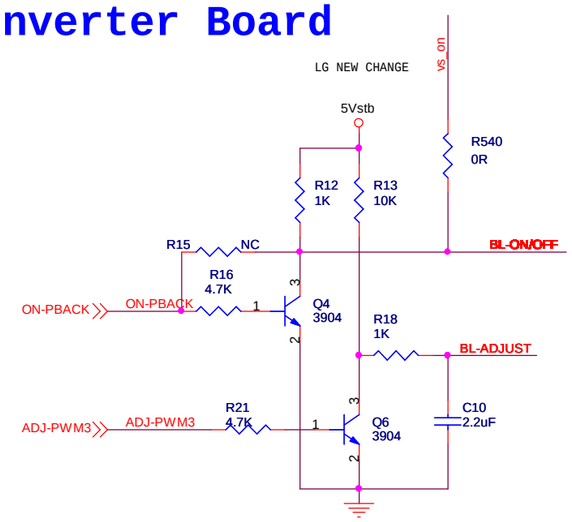




LG32VSCPSUINTERFACE




# TO Inverter Board




| | | | |
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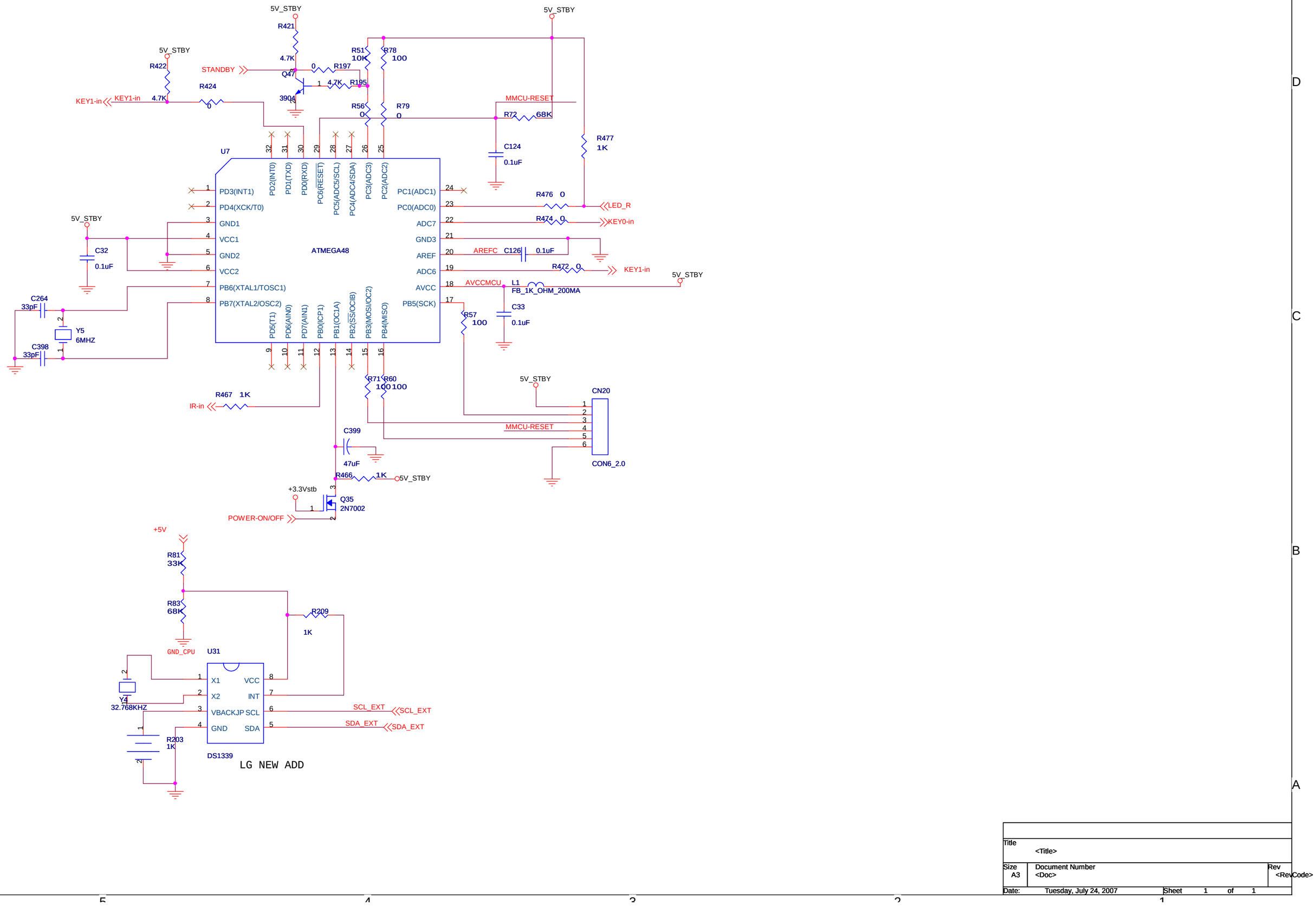
| Date: Tuesday, July 24, 2007 | Sheet 1 of 19 | | |

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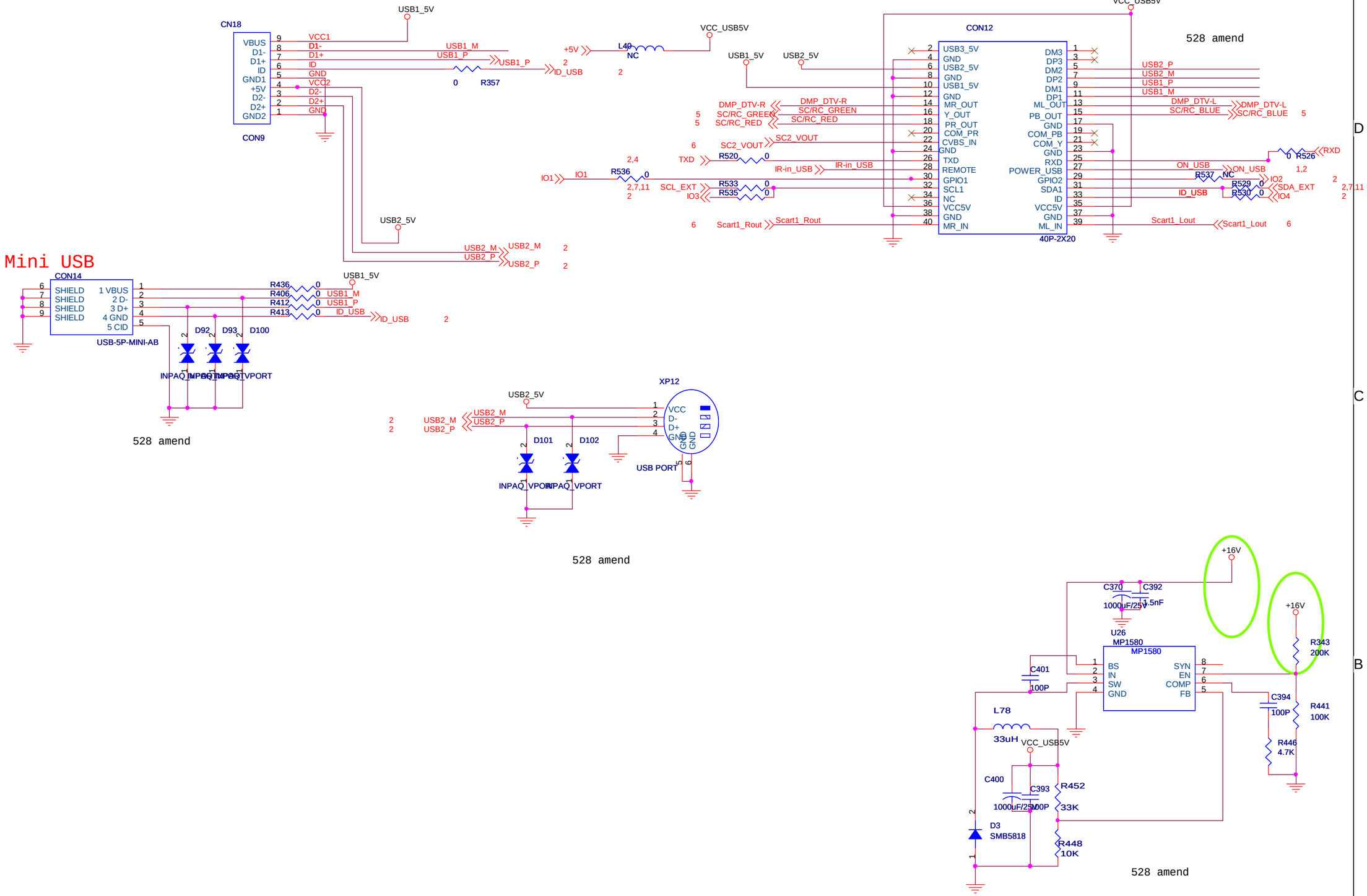
| Date: Tuesday, July 24, 2007 | Sheet 1 of 1 | |

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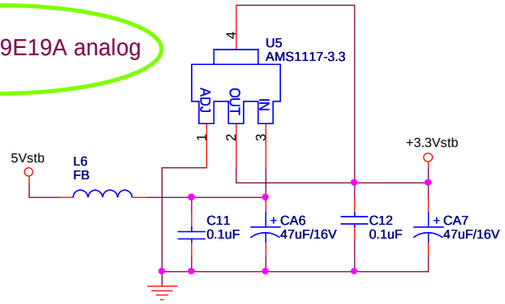
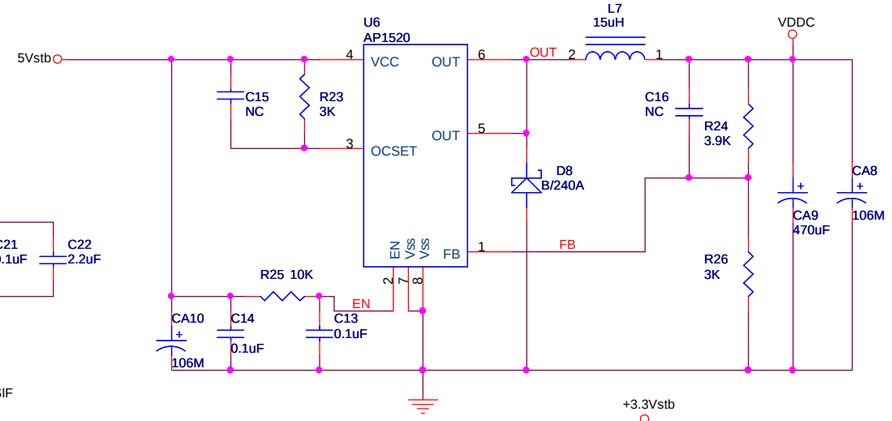
| Size A3 | Document Number <Doc> | | Rev <RevCode> |
| Date: Tuesday, July 24, 2007 | | Sheet 1 of 1 | |

**0.81*(1+Rup/Rdown)=1.8V---Rup=10K, Rdown=8.2K**

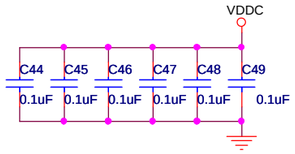
## Vcc3.3for MST9E19A analog



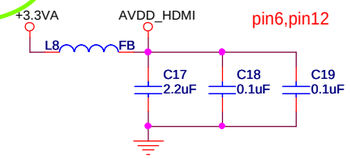

## Vcc1.8 for MST9E19A



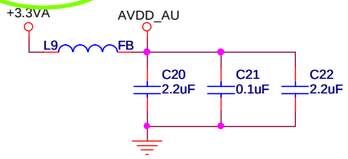

## VDDC for MST9E19A Core



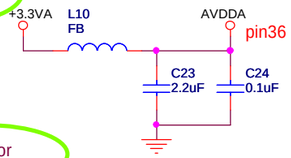

## +3.3AVDD for AVDD_HDMI



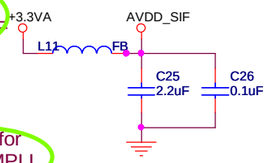

## +3.3AVDD for AVDD_AU



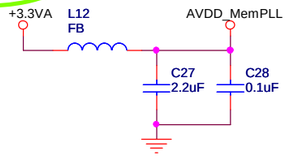

## +3.3AVDD for AVDDA



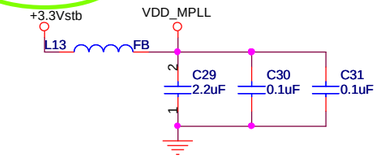

## +3.3AVDD for AVDD_SIF

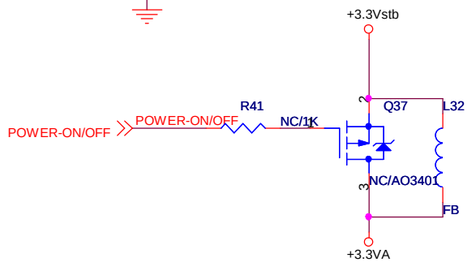



## 3.3V for AVDDPLL2

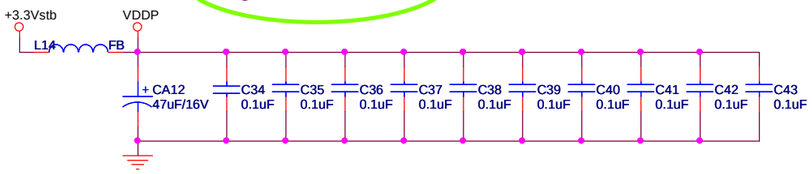



## +3.3V for VDD_MPLL




## Vcc3.3for MST9E19A Digital

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| | | |
|---|---|---|
| Title: <Title> power | | |
| Size: A3 | Document Number: <Doc> MST9E19A | Rev: 2.0 |
| Date: Tuesday, July 24, 2007 | Sheet 2 of 19 | |

## DVI INPUT

R_TX2+ R_TX2+
R_TX2- R_TX2-
G_TX1+ G_TX1+
G_TX1- G_TX1-
B_TX0+ B_TX0+
B_TX0- B_TX0-
TXCLK+ TXCLK+
TXCLK- TXCLK-
HDMI_SDA HDMI_SDA
HDMI_SCL HDMI_SCL

## VGA INPUT

HS_RGB HS_RGB
VS_RGB VS_RGB
BIN+ BIN+
BIN- BIN-
SOG SOG
GIN+ GIN+
GIN- GIN-
RIN+ RIN+
RIN- RIN-

## SCART INPUT

SC_SOG SC_SOG
SCR+ SCR+
SCR- SCR-
SCG+ SCG+
SCG- SCG-
SCB+ SCB+
SCB- SCB-

## VIDEO INPUT

S1-Cin S1-Cin
S1-Yin S1-Yin
S1-Yin- S1-Yin-
AV1-Vin+ AV1-Vin+
AV2/SC1-Vin+ AV2/SC1-Vin+
TV1-Vin+ TV1-Vin+
TV1-Vin- TV1-Vin-
CVBSOut CVBSOut
TV-SIFP TV-SIFP
TV-SIFM TV-SIFM

## Debug port

CN3
CON4_2.0
+5V_mst
RXD
TXD

## Mode Selection

ADJ-PWM3
PWM2
PWM1/WP_FSH
PWM0
R84 1K
R85 NC
R86 NC
R87 1K
R88 NC
R89 1K
R90 1K
R91 NC

## Location Near IC Pin.

AMP-Rout R30 100 AMP-R R51 10nF R35 22K AMP-R
AMP-Lout R42 100 AMP-L C56 10nF R47 22K AMP-L

AUOutR3 R31 100 AUOut3-R C52 1nF R33 22K AUOut3-R
AUOutL3 R44 100 AUOut3-L C57 1nF R48 22K AUOut3-L

AUOutR2 R32 100 AUOut2-R C50 10nF R34 22K AUOut2-R
AUOutL2 R38 100 AUOut2-L C55 10nF R43 22K AUOut2-L

## U8 MST9E19A

SYS_RST R37 1K D110 C54 1nF INPAQ_VPORT
C53 22pF C58 22pF Y2 14.318MHZ R45 1M
R29 10K D9 BAV99 R36 1K Q7 3906 CA13 47uF/16V CA14 10uF/16V R39 10K
R50 390R1% AVDD_HDMI
C61 0.1uF C59 0.1uF C60 0.1uF C62 0.1uF C63 0.1uF
R46 100 R48 100 SCL_EXT SDA_EXT
RP8 RP10 RP4.7KX4 RP12 RP13 RP100X4
HD-VSW0 AMP-MUTE LED_GREEN LED_RED

XIN XOUT HVRESET AVDD_ADC AVDD_SIF AVDD_AU AVDD_MEMPLL AVDD_DVI AVDD_HDMI AVDD_MPLL VDDC VDDP

RXCKN RXCKP RXON RX0P RX1N RX1P RX2N RX2P REXT DDCD_DA DDCD_CK HSYNC1 VSYNC1 RMID VCLAMP REFP REFM BIN1P BIN1M SOGIN1 GIN1P GIN1M RIN1P RIN1M BIN0M BIN0P GIN0M GIN0P SOGIN0 RIN0M RIN0P HSYNC0 VSYNC0 C1 Y1 C0 Y0 VCOM2 CVBS3 CVBS2 CVBS1 VCOM1 CVBS0 VCOM0 CVBSOUT SIF1P SIF1M AUVRADN AUVRADP AUVREF AUL0 AUR0 AUL1 AUR1 AUCOM AUL2 AUR2 AUL3 AUR3 AUOUTL3 AUOUTR3 AUOUTL2 AUOUTR2 AUOUTL AUOUTR AUOUTS VDI2/GPIOF2 VDI3/GPIOF3 VDI4/GPIOF4 VDI5/GPIOF5 VDI6/GPIOF6 VDI7/GPIOF7 VDI8/GPIOF8 VDI9/GPIOF9 VDICLK/GPIOF10 GPIOE11

GPIOF_SEL=01,VDO_PORT_SEL=00 for I2S input

AU_SWAP=11 AISD/DI7 AISCK/DI6 AIWS/DI5 DI4 DI3 DI2 DI1 DI0 ICLK IVSYNC IHSYNC

GPIOE0/LVSYNC GPIOE1/LHSYNC GPIOE2/LDE GPIOE3/LCK

LB0M/R7 LB0P/R6 LB1M/R5 LB1P/R4 LB2M/R3 LB2P/R2 LBCKM/R1 LBCKP/R0 LB3M/G7 LB3P/G6 LB4M/G5 LB4P/G4 LA0M/G3 LA0P/G2 LA1M/G1 LA1P/G0 LA2M/B7 LA2P/B6 LACKM/B5 LACKP/B4 LA3M/B3 LA3P/B2 LA4M/B1 LA4P/B0

RXE0- RXE0+ RXE1- RXE1+ RXE2- RXE2+ RXEC- RXEC+ RXE3- RXE3+ RXE4- RXE4+

SDO CSZ SDI SCK SPI_DO SPI_CZ SPI_DI SPI_CK

GPIOF19 GPIOF18 GPIOF17 GPIOF16 GPIOF15 GPIOF14 GPIOF13 GPIOF12

PWM_SENSE PWM_DRV PWM_FB

LG NEW CHANGE PWR IO

## LG NEW CHANGE

SCL_EXT R543 10
LVDS_SL/SCL BRI_OUT
AISDA BRI EXT/DIS R544 10
SDA_EXT

CN17 40P-2X20
VCC VCC GND GND GND GND LVDS_SL/SCL BRI_OUT TXA0+ TXA0- TXA1+ TXA1- TXA2+ TXA2- TXAC+ TXAC- TXA3+ TXA3- TXA4+ TXA4- GND GND TXB0+ TXB0- AISDA BRI_EXT/DIS GND
NEW INTERFACE 070416

## WP:Mstar PULL DOWN

VDDP L29 FB
U9 EN25F80 CE# SO WP# VSS VDD HOLD# SCK SI
R68 NC R69 33K R70 C199 0.1uF NC
C89 0.1uF C203 2.2uF C198 NC/10pF
RP3 RP33X4 SPI_CK SPI_DI SPI_CZ SPI_DO
PWM1/WP_FSH

## LG NEW ADD RECHANGE

IR-in LED-R 5Vstb D21 INPAQ_VPORT CN88 CON8_2.0

## Location Near IC

CN2 CON3_2.0 KEY1-in KEY0-in D117 D118 INPAQ_VPORT
5Vstb R53 4.7K IR-in
Q10 3904 IR_SYNC R61 1K R63 4.7K C66 100pF
Q34 3904 IR-in_USB R134 1K R194 4.7K

## Debug port

U10 24C32 A0 A1 A2 GND VCC WP SCL SDA
C92 0.1uF R159 4.7K R295 4.7K R74 100 I2C-SCL R75 100 I2C-SDA
I2C address at A0.

U11 24C04 A0 A1 A2 GND VCC WP SCL SDA
R80 10K C93 0.1uF WP_EP
CN4 CON5_2.0 SDA SCL WP_EP
R73 10K R82 NC
HDCP I2C address at A4.

## Mode Selection

VDDP R84 1K R85 NC R86 NC R87 1K ADJ-PWM3 PWM2 PWM1/WP_FSH PWM0 R88 NC R89 1K R90 1K R91 NC

## Debug port

CA16 10uF/16V C91 0.1uF CA15 10uF/16V C90 0.1uF AUVREF AUVRADP AUVRADN

PC-Lin PC-Rin AV1-Lin AV1-Rin SC2-Lin SC2-Rin AV2/SC1-Lin AV2/SC1-Rin C80 C81 C82 C83 C84 C85 C86 C87 C88 2.2uF R67 0 AUCOM

AUOutL3 AUOutR3 AUOutL2 AUOutR2 AMP-Lout AMP-Rout

C64 C65 C69 C70 C71 C72 C73 C74 C75 C76 C77 10nF R65 47 R66 47 SC2_VOUT
C78 C79 0.1uF SIFP SIFM

SV_C1 SV_Y1 SV_C0 SV_Y0 VCOM2 CVBS3 CVBS2 CVBS1 VCOM1 TUNER_CVBS VCOM0 CVBSOut SIFP SIFM AUVRADN AUVRADP AUVREF

## I2C

+5V_mst R76 4.7K R77 4.7K I2C-SDA I2C-SCL TXD RXD RP11 RP100X4 DDC-TXD DDC-RDX KEY0 KEY1

## IR

D120 INPAQ_VPORT C132 100R 100pF R150 IR_SYNC

## ADJ-PWM3

ADJ-PWM3 PWM2 PWM1/WP_FSH PWM0

## LG NEW CHANGE

R538 100 DISPEN
RP9 RP7 RP100X4 POWER-ON/OFF ON-PBACK HPDCTRL PANEL-ON/OFF USB-PW WP
RP6 RP5 RP4.7KX4

## KEY

5Vstb R539 4.7K R542 0r Q50 3904 LED_RED R157 4.7K R294 470 LED-R R541 0r
R52 8.2K R54 8.2K KEY0 KEY1 R58 1K R59 1K KEY0-in KEY1-in R62 NC C67 100pF R64 NC C68 100pF

## BRI_OUT/ BRI_EXT/DIS

+3.3Vstb R351 4.7K BRI_OUT R355 NC
+3.3Vstb R352 4.7K R354 NC DISPEN R353 NC BRI_EXT/DIS R356 0

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|---|---|---|
| Title | MST9E19A | |
| Size A2 | Document Number MST9E19A | Rev 2.0 |
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XP8
HDMI_J

DATA2+ 1
DATA2 SHIELD 2
DATA2- 3
DATA1+ 4
DATA1 SHIELD 5
DAT1A- 6
DATA0+ 7
DATA0 SHIELD 8
DATA0- 9
CLK+ 10
CLK SHIELD 11
CLK- 12
CEC 13
NC 14
SCL 15
SDA 16
DDC/CEC GND 17
+5V POWER 18
HOT PLUG 19
GND1 20
GND2 21
GND3 22
GND4 23

HDMI-RX2+
HDMI-RX2-
HDMI-RX1+
HDMI-RX1-
HDMI-RX0+
HDMI-RX0-
HDMI-RXC+
HDMI-RXC-

R92 10 R_TX2+ → R_TX2+
R93 10 R_TX2- → R_TX2-
R94 10 G_TX1+ → G_TX1+
R95 10 G_TX1- → G_TX1-
R96 10 B_TX0+ → B_TX0+
R97 10 B_TX0- → B_TX0-
R98 10 TXCLK+ → TXCLK+
R99 10 TXCLK- → TXCLK-

HDMI/5V
R100 1K
HDMI-HPD
HDMI-DDC-SCL
HDMI-DDC-SDA

5Vstb
D18 BAT54C

R101 10K
R102 10K
R103 NC
R104 100
R105 100
R106 0
D19
D20
INPAQ_VPORT
INPAQ_VPORT

U12
24C04
VCC NC
WP NC
SCL NC
SDA GND
C94 0.1uF

HDMI_SCL → HDMI_SCL
HDMI_SDA → HDMI_SDA

R156 NC/810K
Q11 3904
R107 1K
HPDCTRL → HPDCTRL

U3
HDMI-RX2+
HDMI-RX2-
HDMI-RX1+
HDMI-RX1-
VCC GND
AGND
RClamp0514

U4
HDMI-RX0+
HDMI-RX0-
HDMI-RXC+
HDMI-RXC-
VCC GND
AGND
RClamp0514

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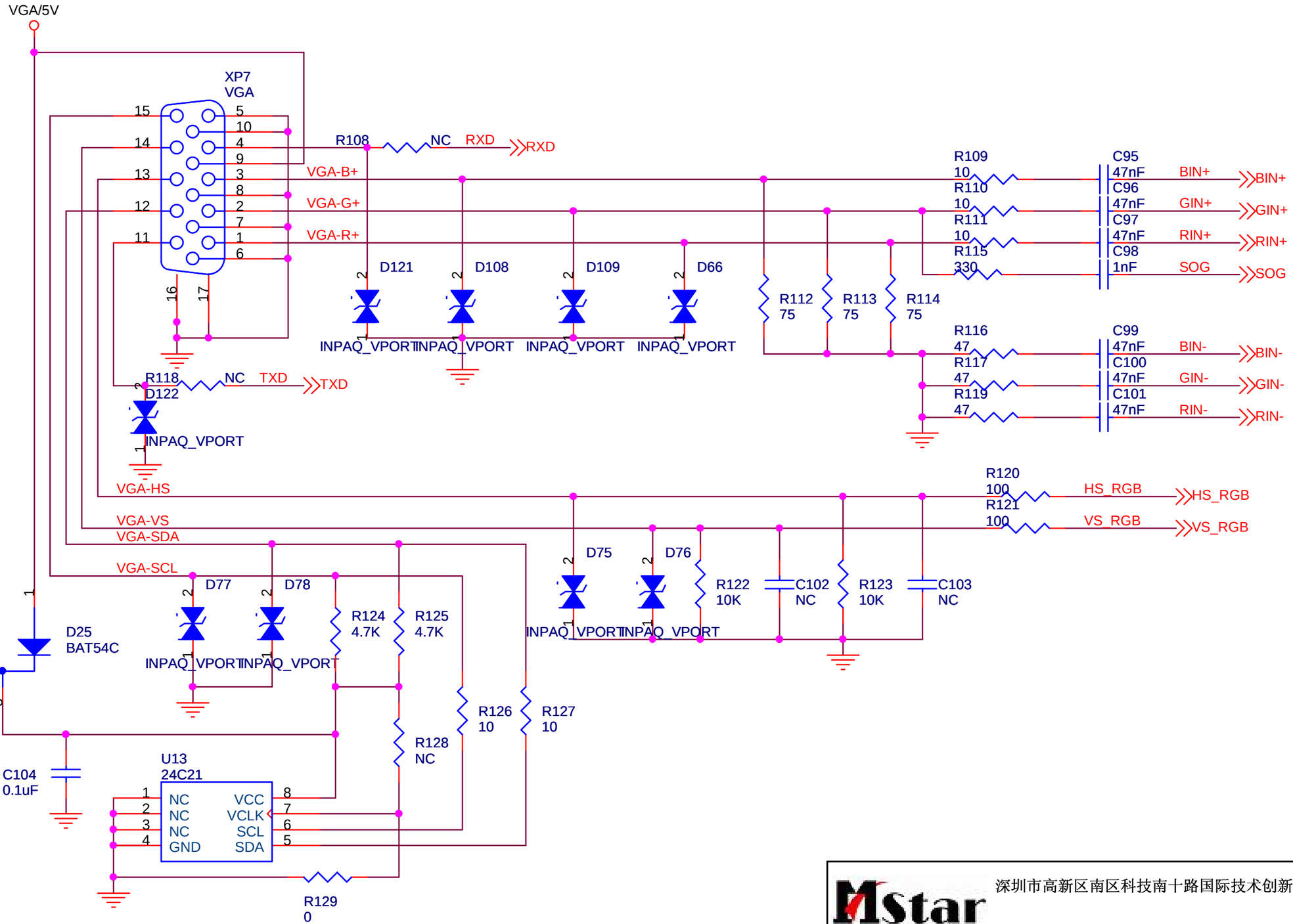
|---|---|---|
| Title: HDMI | | |
| Size: A | Document Number: MST9E19A | Rev: 2.0 |
| Date: Tuesday, July 24, 2007 | Sheet 4 of 19 | |

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|---|---|---|
| Title: VGA | | |
| Size: A | Document Number: MST9E19A | Rev: 2.0 |
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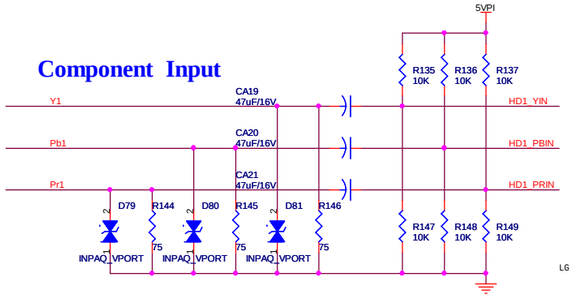
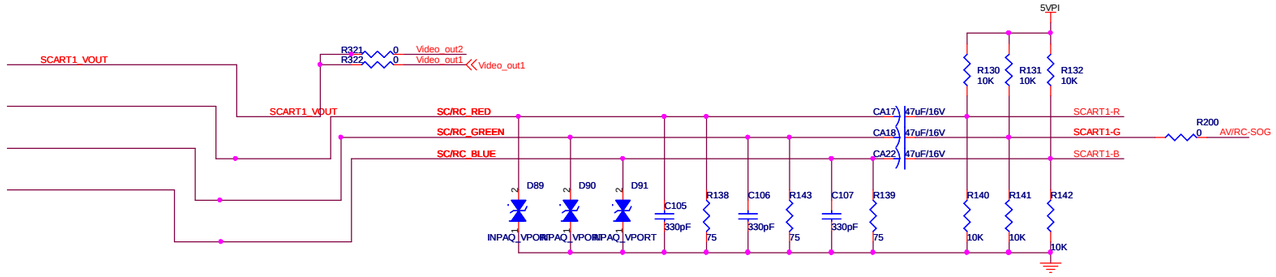
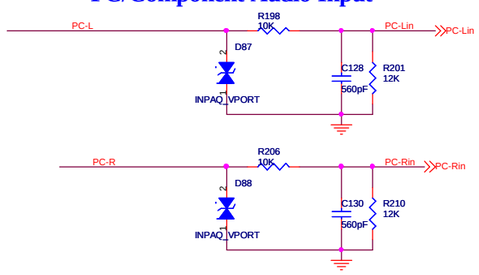
## Component Input

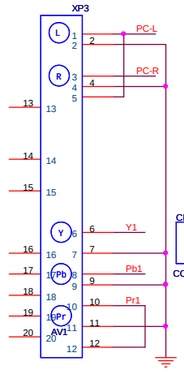


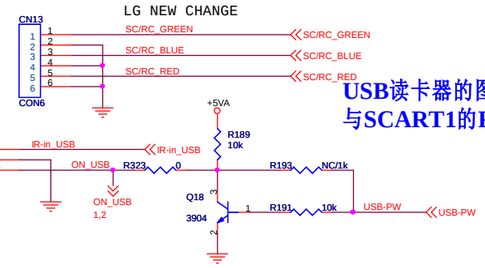

LG NEW CHANGE




## PC/Component Audio Input

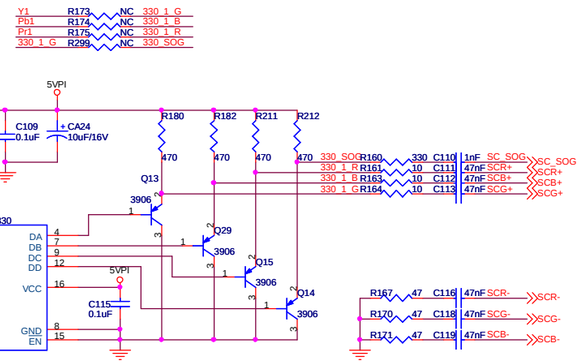


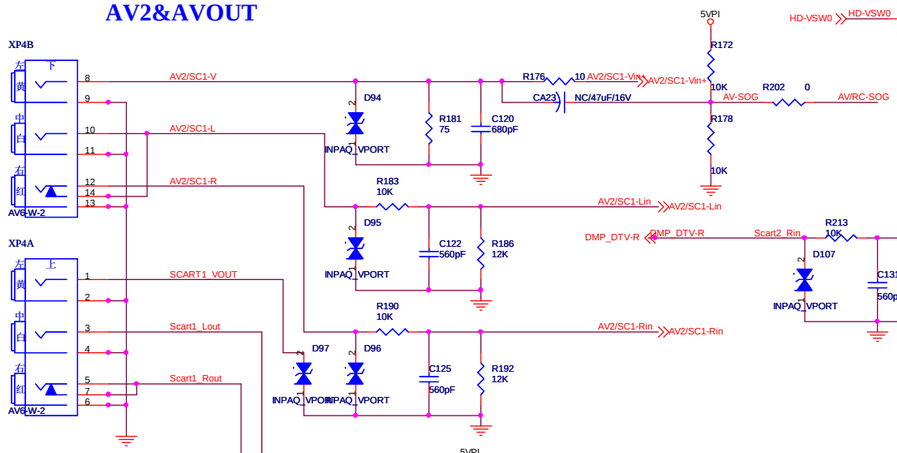

LG NEW CHANGE

**USB读卡器的图像YPbPr格式与SCART1的RGB共用**

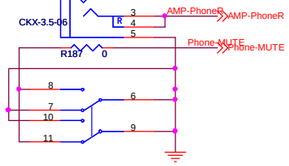


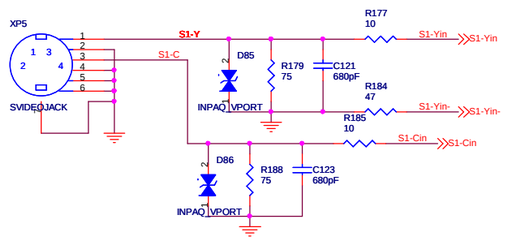

**USB读卡器的声音左右声道与SCART2的声音输入共用**

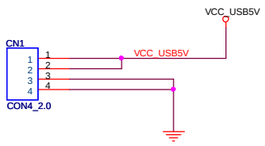
## AV2&AVOUT

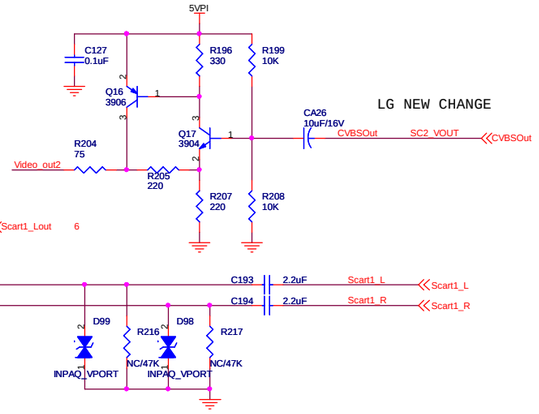


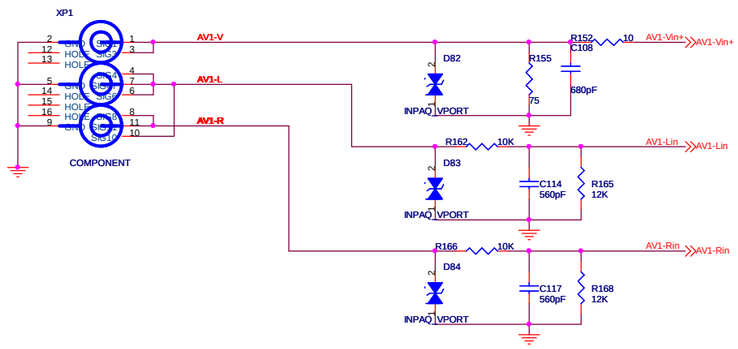

LG NEW CHANGE





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|---|---|---|
| Title | Video input | |
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| Date: Tuesday, July 24, 2007 | Sheet 6 of 19 | |

U23 PIN2 connected to PIN1 B/G,DK,I,L
U23 PIN2 connected to GND L'

**I2C ADDRESS(R263 NC):**
**READ is 0X87**
**WRITE is 0X86**

U15 TUNER_IF
GND3 GND2 GND1 GND4 GND5 GND6 GND7 GND8
AGC NC1 AS SCL SDA 5VA 5VB NC3 33V NC4 IFout
AGND
IF_TV
C133 0
R224 NC/75
R225 NC/1.2K
R229 0
+5VA
L18 FB
CA33 10UF/16V
C140 0.1uF
R233 0 IF-AGC
R234 10 SDA_EXT
R235 10 SCL_EXT
C143 22pF
C144 22pF
40V
R237 1K
R240 100K
C146 0.1uF
33V
33vtu
D56 C33V1
C147 0.1uF
CA29 1uF/50V
+12V_all1
R340 10
C149 47nF
D57 BAV99
C150 1nF
L23 100uH
L20 100uH
Q21 2N7002
R243 100K
C155 820pF
C151 100pF
C152 NC
D58 5.6V
C153 0.1uF
CA37 47uF/16V
L21 FB
+12V_all
CA30 1uF/50V
R280 20k 33vtu
LG NEW 5V TO 40V
D64 iss400
C204
C195 130p
L28 1m
R282 1K
D69 C33V1
130p
C196 0.01u
C205 0.01u
Q24 3904
C190 1500p
L27 220u
C191 0.1uF
CA42 1uF/16V
R250 0r
+5V
+5V_all
NC/600(4.5X3.2)
L30
CA59 100uF/16V
C197 0.1uF
TV1-V
L25 0
C163 NC/330pF
C164 NC/330pF
R256 75
R255 10
TV1-Vin+
R258 47
TV1-Vin-

+5VA
R219 4.7K
R220 4.7K
R221 4.7K
D53 NC/BA277
Q19 3904
R227 10K
R228 NC
C134 10nF
D54 0/BA277
D55 BA277
C142 10nF
R238 4.7K
R239 NC
U16 SAW
IN OUT2 ING GND OUT1
N9455
R308 6.8K/8.2K
R309 2.2K/6.8K
C148 10nF
R242 NC
L22 NC
D63 IN4148
U18 SAW
N6274
Q38 3904
R306 100
R305 NC
C200 10nF
R307 4.7K
TDA9885&6
C154 10nF
R246 5.6K
C156 390pF
C158 10nF
C159 470nF
C157 1nF
R247 NC(2K)
R248 220
R249 100
C160 0.1uF
TV-SIFM
Y3 4MHz
C135 330
1.5nF
C136 0.1uF
R230 R231 22K
R232 100K
C137 0.1uF
CA32 47UF/16V
C138 220nF
C139 470nF
C141 22pF
IF-AGC
5V-OUT
L19 FB
C145 0.1uF
CA34 47uF/16V
AGND
TV
R236 1k
Q20 3904
TV1-V
R241 75
U17
SIF2 SIF1 OUT2 AFC VPP VPLL AGND CVBS REF TAGC NC
VIF1 VIF2 OUT1 FMPLL DEEM AFD DGND AUD_OUT TOP NC(5)/VAGC(6) SDA SCL SIOMAD
R244 100 SCL_EXT
R245 100 SDA_EXT
TV1-L/R
SIFPOUT

L24 10uH
C162 0.1uF
R252 1K
R253 10
SIFPOUT C165 10nF
Q23 3904
R257 0
C166 0.1uF
TV-SIFP
R259 1K
C167
R260 820 22pF

5V-OUT
Q22 3904
C161 0.1uF
TV R318 1k
R320 75
R319 220
Video_out1

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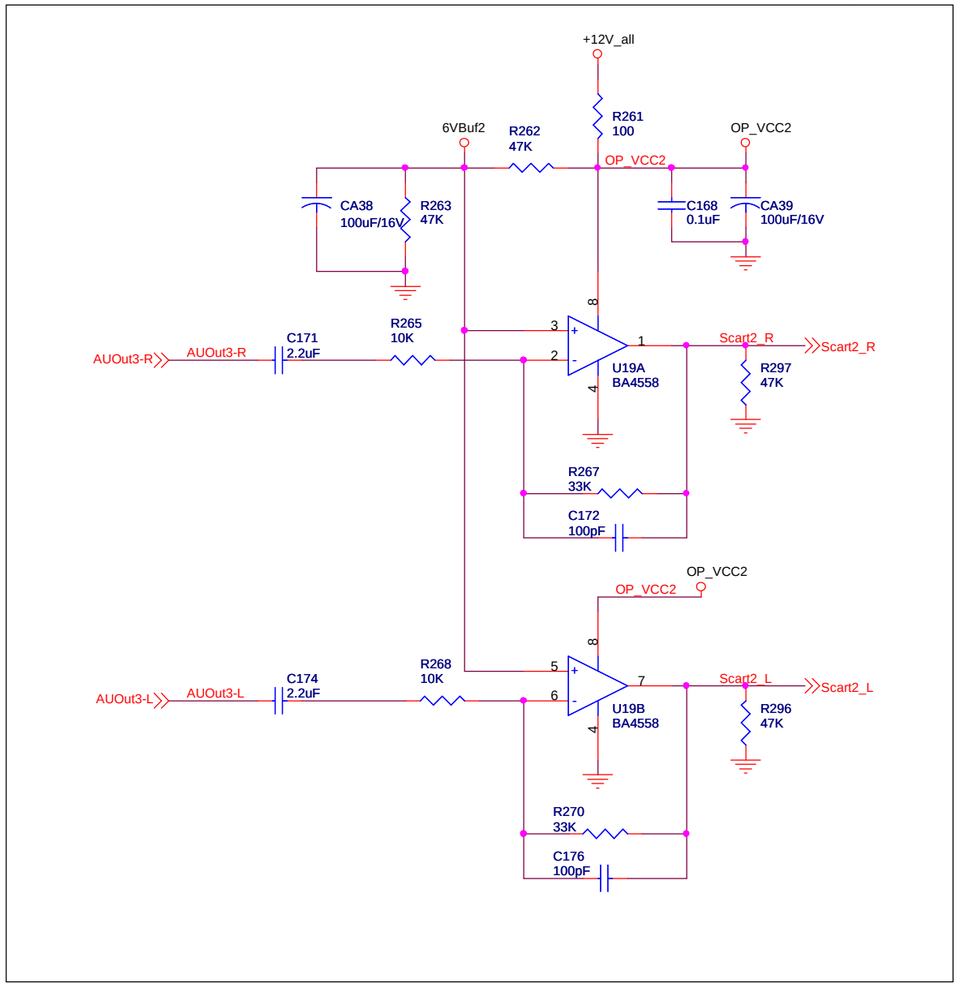
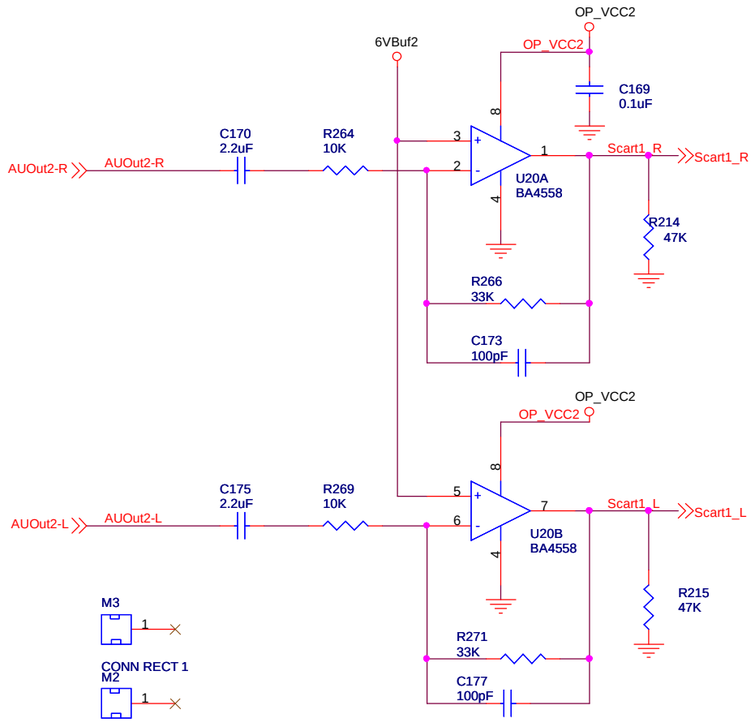
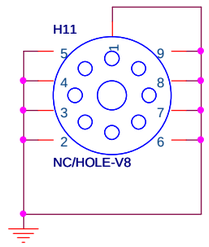
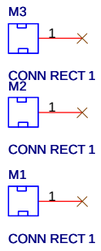
|---|---|---|
| Title: TUNER | | |
| Size: B | Document Number: MST9X88L | Rev: 01A |
| Date: Tuesday, July 24, 2007 | Sheet 7 of 19 | |

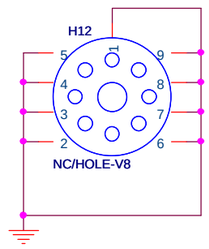
# Audio OP(AUOUTL3/AUOUTR3; AUOUTL2/AUOUTR2)

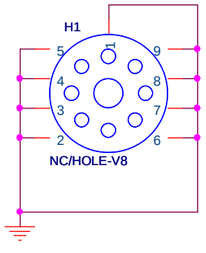


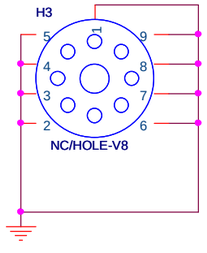



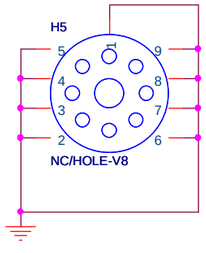



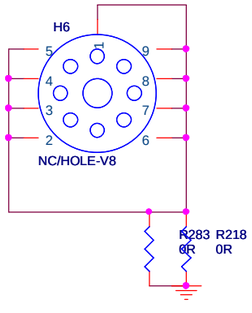



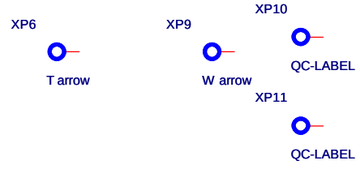

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| Title: MSTAR | | |
| Size: A3 | Document Number: MST9E19A | Rev: 0.01 |
| Date: Tuesday, July 24, 2007 | Sheet 8 of 19 | |

FOR TDA1308/PT2308 L26 FB,R298 NC;
FOR TL062 L26 NC,R298 0;

+5VA
+12V_all
6VBuf1
L26
R298
CA40 100uF/16V
R281 33K
NC
100
OP_VCC1
R292 33K
C186 0.1uF
CA41 100uF/16V
U22A BA4558
AMP-L
AMP-L
C207 2.2uF
AMP_L1
R289 10K
C187 1nF
R286 33K
C201 100pF
AMP-L2
C213 4.7uF
R334 47K
R333 100
R332 100K
Q32 3906
CA44 100uF/16V
AMP-PhoneL

OP_VCC1
U22B
AMP-R
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C209 2.2uF
AMP_R1
R288 10K
C188 1nF
BA4558
R291 33K
C189 100pF
AMP-R2
C202 4.7uF
R330 47K
R329 100
R331 100K
Q33 3906
CA45 100uF/16V
AMP-PhoneR

+5V
9vsc
+16V
R346 NC
R317 NC
R347 NC
Vcc_jz
CA51 47uF/35V
D65 1N4148
R133 100k
R313 47k
D67 1N4148
R339 100K
CA52 47uF/35V
R316 1K
Q36 3906
D68 1N4148
R386 47K
AMP-MUTE
R349 1K
Q40 3904
Mute
R324 0
Phone-MUTE
Phone-MUTE
R378 100
Q27 3904
R341 22K
C192 4.7uF
AMP-L2
AMP-R2
AMP-R2
R379 100
Q41 3904
R312 22K
C208 4.7uF
D59 13v
D62 1N4148
R389 4k7
R390 100
Mute

C1 22pF
R3 180k
FB1
C2 1uF/25V
0.1uF C206
100uF/35V
C3
D12
+16V
R380 100K
C4 10uF/50V
R383 100K
U33
MP7722
C5 1uF/25V
R388 0R
C8
D11 0.47uF/25V
R275 20K
D7 1N4148
C185 1uF/25V
C210 1uF/25V
D10
C6 3.3nF
C7 3.3nF
R279 10k
C9 3.3nF
AMP-PLout
C220 2.2uF/50V
R7 10k
R5 NS
AMP-PRout
C222 2.2uF/50V
R382 10k
R381 NS
R387 0R
C178 0.47uF/10V
D5 6.2V
R22 20K
D6 1N4148
R277 100K
C183 10uF/50V
R278 100K
R384 10k
C223 3.3nF
Mute
FB2
C218 0.1uF
C219 100uF/35V
R276 180k
C184 22pF
D1
R6 10
R304 10k
C216 390pF
L4 10uH/3.5A
C221 0.47uF/50V
C217 1000uF/25V
R8 10
C215 0.1uF
SPAMP-Lout
D4
R272 10
R274 10k
C180 390pF
L2 10uH/3.5A
C182 0.47uF/50V
C181 1000uF/25V
R273 10
C179 0.1uF
SPAMP-Rout
CN8
CON4_2.54
R376 0 AMP-PLout
R377 NC
R375 0 AMP-PRout
R374 NC
L36 600(4.5X3.2)
L37 600(4.5X3.2)

POWER GND AND SIGNAL GND IS CONNECTED SIDE PIN4 AND PIN9

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| Title: TDA1517 | | |
| Size: A3 | Document Number: MST9E19A | Rev: 2.0 |
| Date: Tuesday, July 24, 2007 | Sheet 9 of 19 | |